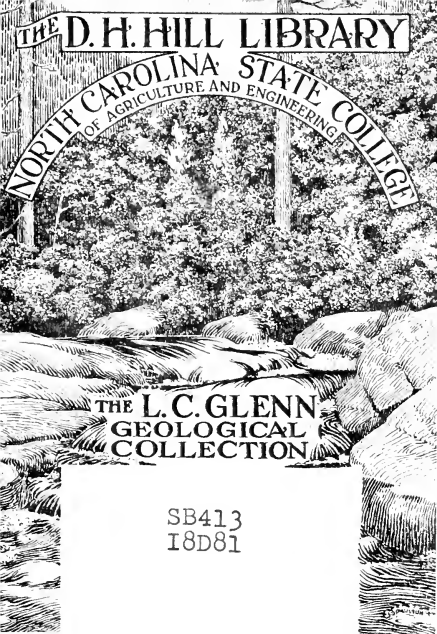


IRISES



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PLATE I (*Prontispiece*)

I. BUCCHARICA—A TYPICAL JUNO IRIS

Iris

W. Rickatson Dykes

*With Eight Coloured
Plates*



PREFACE BY PROFESSOR BAYLEY BALFOUR

NEW YORK
FREDERICK A. STOKES CO.

PREFACE

THE gardening world has recognised for some time past that in the realm of Iris the mantle of the late Sir Michael Foster descended upon the writer of this book—and it will confirm the succession. It is a good book—written with all the verve and freedom of accurate knowledge derived from observation of the plants as they grow as well as from study of their dried bones in collectors' herbaria—an essential combination for the elaboration of any sketch that is to suggest claim to authority in such plants, and this book does suggest and makes good its claim in this respect.

Not the most ardent enthusiast can pretend that Iris-culture attracts in our days with the intensity which the intrinsic merit of the species should command, and in some degree this lukewarmness may be ascribed to difficulties over which no help has been obtainable from any concise but not technical exposition of their forms and needs. The facile rhizome with potential immortality of the Bearded Iris has given it a dominance in cultivation through which it has become an obsession as the type of Iris, and it must always have a prominent place in estimation, but the growth-forms of members of other groups—Juno, for example—modify in no small measure the stereotyped concept of what is an Iris, and the daintiness, softer blendings, less demonstrativeness of many of them ask for them a share of atten-

tion which they have not received. True, the Xiphiums of the bulbous section have established for themselves rightly a popular position, but hardly so the Reticulatas nor yet the Junos ; and what is there more beautiful than a " bush " two feet high—such it is even in the inclement climate of South-east Scotland—of that gem of the Junos, *I. bucharica* ? Can we say of the Evansias that those unfailingly responsive and dainty forms, *I. gracilipes* and *I. cristata*, are known as they deserve ? or that free-growing Apogons like the Californian *I. Douglasiana* and *I. Purdyi* are sufficiently known ? No more need be said. By the publication of this book the conditions will be changed. Mr. Dykes supplies in it just the assistance that has been hitherto wanting, opening wide the avenue of Iris-culture, and the outcome of his effort will be a wider interest in the cultivation of Irises and a more general introduction of forms as yet unusual in gardens.

Beginning with a short but adequate account of the structure of the Iris plant and of the groups into which the genus may be conveniently divided, Mr. Dykes continues with an easy and reliable description of the leading characteristics and requirements of the several cultivated species in their respective groups. In this part of the book the gardener will gather with peculiar joy the suggestion of those easily grasped marks—tips from the man who knows—which will enable him to recognise his species with certainty and to tell one species from another. He will find differential garden puzzles, such as that of *I. pumila* and *I. chamæiris*, of *I. lævigata* and *I. Kämpferi*, of *I. ruthenica* and *I. humilis*, and many others, dealt with succinctly and a key supplied, and problems of hybridisation and other problems touched upon suggestively with a stimulus to investigation.

The chapters on the best species for planting in different situations form a garden-guide of judicious advice to the cultivator, and along with the concluding calendar provide a directory by means of which any gardener may achieve success in Iris-culture and enjoy the delight of uninterrupted succession of bloom from January to December.

The whole story is necessarily brief within the compass of so small a volume—nevertheless compendious. It is, however, no secret that in this little guide for everybody we have only a whet to the banquet which Mr. Dykes has prepared for us in the larger book, with full descriptions and many illustrations of the species of Iris, that is to appear shortly through the enterprise of the Syndics of the Cambridge University Press. In relation to that larger work this sketch will be a primer. In their association Horticulture will have a story of Iris in Present-day Gardening for which Mr. Dykes will merit gratitude.

ISAAC BAYLEY BALFOUR.

ROYAL BOTANIC GARDENS,
EDINBURGH.

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IRISES

INTRODUCTION

It is not the object of this book to provide a scientific account of the Iris genus, nor is it proposed to enter into questions of classification and affinity, however interesting these may be. Indeed, it would hardly be possible within the limits of this series to give detailed descriptions of all the individual species, or to unravel the entanglements that have arisen in their nomenclature.

To accomplish the latter, it is in many cases necessary to start with the account given in Linnæus' *Species Plantarum*, of which the first edition was published in 1753, and to try to discover to what Linnæus was really alluding when he wrote his description. It is a fascinating inquiry, for, with the help of a good botanical library, such as that of the Kew Herbarium, it is possible to trace back Linnæus' species through the earlier writers until we come to the first description of each species, from which the plant can usually be recognised. For instance, in early days the Spanish and the English Irises were hardly separated, and in trying to discover what Linnæus meant by *I. xiphium* we get back at length to Carolus Clusius, the latinised version of the name of one Charles de l'Escluse, a botanist who travelled

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in the Spanish peninsula and in Germany and Austria about the middle of the sixteenth century. He published accounts of the rarer plants that he found in these two regions, and it is in his Spanish volume that we find accounts of both the Spanish and the English Irises as we now know them. One feature alone is sufficient to distinguish the two, and that both were known to Clusius is proved by the fact that he notes that the one has larger seed-vessels than the other—so large, in fact, that the seeds rattle in them when ripe. This exactly describes the capsule of the English Iris. That of the Spanish varieties is much narrower, so that the seeds have not room to rattle much in it.

From this we may infer that Linnæus included under the name of *I. xiphium* both the plants that are now known as the English and Spanish Irises.

But it is obvious that it would be impossible to give here the result of similar inquiries and searches with regard to all the other hundred and fifty odd species, that have been found growing wild from California and Alaska in the west to China and Japan in the east, and from Hong-Kong in the south to Labrador in the north.

It will be better to devote the space at our disposal to the consideration of the Iris as a decorative and pleasure-giving garden plant, which might be far more often employed than at present seems to be the case for the adornment of rock gardens, bog gardens, and herbaceous borders. Few gardeners realise the possibilities of species and varieties of Iris for one or other of these purposes. Still less is it generally known and appreciated that, possibly with the help of a cold frame or a few small portable lights,

it is not at all difficult to have some Irises in flower in every week in the year. It is true that two of the species that can be relied upon to flower in November and December must usually be renewed every year, for in our climate it is almost impossible so to ripen the growth of *I. alata* and *I. Vartanii* as to ensure their flowering again in the following season. However, bulbs of *I. alata* can now be obtained very cheaply, and a shilling or two invested in them will be well repaid.

In September and October the supply of Irises is somewhat uncertain, and depends a good deal on the season, and even, it appears, on the idiosyncrasies of individual plants; that is to say, that of certain kinds of Bearded Iris, one seedling may prove to have the habit of flowering a second time in the autumn in favourable circumstances, while all the others that have been raised from seeds of the same pod content themselves with a single flowering season in the early part of the year.

Instances of bulbous Irises flowering twice are very uncommon, but some bulbs of the rare *I. Rosenbachiana* once came into flower in December and January after they had already bloomed in the previous March. Most of them unfortunately paid the penalty of the rashness in flowering again thus prematurely by growing very feebly in the following spring and failing to complete and ripen their growth in a satisfactory manner. On the contrary, an autumnal display of flowers does not seem to be in any way harmful to vigorous, rhizomatous species. A variety of *I. variegata*, known as Gracchus, which is a most profuse flowerer in May and early June, will not infrequently flower again

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in September and October, and even then be ready to bloom again in the following spring.

The existing literature on the Iris is mostly to be found scattered in various botanical and horticultural publications, many of which are only accessible in the libraries of the Herbarium Department at Kew and at the Natural History Museum at South Kensington, or in a few other large libraries. A most useful compendium of many of these scattered references will be found in Mr. J. G. Baker's *Handbook of the Irideæ*, published in 1892. Since that date no attempt has been made to bring together in a systematic manner either the references to the newer species or the results of further research concerning those already known. And yet much remains to be done, both in the direction of clearing up many difficulties of nomenclature and synonymy, and also in reviewing the species already described in the light of the recent advances in the study of heredity that we owe to Mendel and Bateson.

In 1904 Mr. R. Irwin Lynch, of the Cambridge Botanic Garden, published in *The Book of the Iris* a more popular and less severely technical version of Mr. Baker's treatment of the genus. Little attempt was made to check the accuracy of the references and descriptions given in the *Handbook*, but Mr. Lynch's work made a great appeal to those gardeners who were interested in Irises and yet were not sufficiently conversant with botanical terms to be able to derive from the dry details of the earlier work much idea of the appearance of the plants therein described. To the professional botanist, the colour of the actual

DIVISIONS OF IRIS GENUS 5

flowers is of very little importance, and indeed it is often unknown to him, for in most cases he has never seen the living plant, but only dried herbarium specimens. To the gardener, however, it is somewhat disconcerting to find that in the scientific *Handbook* the flowers of five out of the first six species are dismissed with the laconic description "limb lilac," nor is he much helped by the occasional addition of the qualifying adjectives, "bright," "dark," and "plain."

Mons. H. Correvon's little work, entitled *Les Iris dans les Jardins*, is obviously founded on Mr. Lynch's book, but contains certain additions and some useful cultural hints.

CHAPTER I

THE DIVISIONS OF THE IRIS GENUS

VARIOUS attempts have been made to arrive at the natural divisions among Irises, but no entirely satisfactory system has yet been thought out. It may, however, be as well to give some rough outline of the main classes into which Irises seem to fall, and to explain the significance of the names that have been applied to the various groups.

The first and main division is into bulbous and non-bulbous species. Each of these two main divisions falls in its turn into several subdivisions, which themselves may be further subdivided into groups.

To take first the bulbous Irises, the bulb may in its resting

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state, either be a simple bulb something like that of a small *Narcissus* but without the neck of the latter, or it may possess several thick, tapering, fleshy roots, attached to the base of the bulb, which send out branching rootlets when growth begins again in autumn.

To the former class belong the *Xiphium*, or Spanish Iris group and the *reticulata* section. To the latter class belong the Juno Irises, most of which are of comparatively recent introduction from Central Asia, although one member at least of the subdivision, *I. persica*, has been in cultivation in England at any rate since the middle of the sixteenth century.

So far the task of division has been easy, but when we come to the other main division, namely, the species with rhizomatous rootstocks, our difficulties immediately become greater. The various divisions with which we have here to deal are less clearly and easily defined. They consist, in the first place, of the *Pogoniris* group or Bearded Irises, the name being derived from the Greek *πώγων*, a beard, and the *Apogon* species, which, as the name implies, should be beardless. Unfortunately, some of the species, which in other respects seem to belong to the latter group, have on the blade of the fall a pubescence, which under the microscope becomes distinctly a beard. However, both these classes are easily distinguished from the *Evansias*, a small group in which the beard is replaced by a crest. The name *Pseudevansia* has been invented for a group of Irises in which the beard was supposed to spring from a kind of low ridge, running down the centre of the fall, though it is doubtful whether there are really any Irises belonging to such a class.

STRUCTURE OF IRIS FLOWER 7

Another division bears the mysterious name of *Oncocyclus*, whose author does indeed give the two Greek words of which the name is composed, but omits to give the interpretation thereof. As one of these means a circle and the other anything from a mass or the space that contains it to dignity, majesty, or even a topknot, we are left in the dark as to the meaning that he attached to the word. It may have some reference to the curious shape of the seeds, which is characteristic of this and another closely allied group, named *Regelia* after Dr. Regel, of St. Petersburg, by whose exertions so many Central Asian species were introduced into cultivation.

Outside these main subdivisions, there are various miscellaneous species that do not seem to fit into any of them. Two species, for instance *I. nepalensis* and *I. Collettii*, have neither a bulb nor a rhizome for their rootstock, but a mere growing point to which a bundle of fleshy roots is attached, closely resembling those of the *Hemerocallis*.

CHAPTER II

THE STRUCTURE OF THE IRIS FLOWER

To define an Iris is not altogether as easy as it might seem at first sight. To say that it is a monocotyledonous plant, whose perianth is divided into two regular whorls, each of three segments, is prosaic, mystifying to the non-botanical mind, and unsatisfying even to the botanist. For this definition includes, besides Irises proper, other

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bulbous plants such as *Moræas*, which used, indeed, formerly to be classed with *Iris*es. But what is the difference between an *Iris* and a *Moræa*? The standard book on the *Irideæ* affords us no further light on this question than that *Iris*es grow north of the Equator and *Moræas* south of it! This may be true, but it is hardly scientific, although it would certainly add to the interest with which the botanical world would await the first flowering of any bulbous plants that might be brought from the temperate regions on the Kenia and Kilimanjaro Ranges, which lie almost directly under the Equator in Central Africa. As a matter of fact *Iris*es are only separated from *Moræas* by the existence of a tube, however short, between the ovary and the base of the segments of the perianth. In a *Moræa*, the divisions of the flower rise directly from the top of the ovary without the intervention of any tube. The six segments of the flowers of an *Iris* are popularly known as the "standards" and the "falls." The terms are convenient, but nevertheless inappropriate when applied to such groups as that of the *Juno* *Iris*es, where the standards are either horizontal or drooping, while the falls stand up at an angle of at least 45° . In addition to these six segments, there are the three style branches, which arch over the anthers and bear on their under side near the extremity the stigmatic surface, through which the flower is fertilised. The style branches form the roof and the haft of the falls the floor of a kind of tunnel. The stigma projects downwards at the mouth of this tunnel, along the roof of which lie the anthers. These bear the pollen, and at their base exudes the nectar which entices the insects.

THE RETICULATA GROUP 9

In theory and in the text-books, the bee or other insect pushes his way obligingly down the tunnel, collects pollen on his back from the anthers, and deposits some of it on the stigma in the next tunnel that he enters. In practice, however, the bee is apt to take short cuts, and may be observed time after time forcing himself in between style and fall near the base of the tunnel and so avoiding both anther and stigma. Occasionally a bee is unenterprising and does the expected, and then pollination is effected, if he happens to have Iris pollen on his back. This, again, is a point in which the text-books do not agree with fact, for a little observation in the garden on a sunny day will soon prove that a bee does not on each expedition from the hive confine himself to the flowers of one particular species or genus.

Insects cannot therefore be relied upon to fertilise Irises, and the result is that, in cultivation in England at any rate, only certain species set seed at all readily, and these are precisely those in which a certain formation of the stigma makes self-pollination not only possible, but probable and even almost necessary.

CHAPTER III

BULBOUS IRISES

I. THE RETICULATA GROUP

THIS group of winter or early spring flowering Irises comprises those species in which the bulbs are covered

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with an outer coat consisting of a network of fibres. The name is derived from the Latin *reticulum*, a little net.

All the members of this group are natives either of Asia Minor or of the regions immediately to the east, north, and south of that country, and all agree in possessing narrow leaves, which are irregularly four-sided, and which end in a horny top. The southernmost representative is apparently *I. Vartanii*, which comes from Nazareth, and flowers in October or November. It is consequently difficult to keep, and as the colour is a poor, slaty blue, it would hardly be worth cultivating, except for its delightful scent of almonds, and for the fact that it flowers when few other Irises can be relied upon to send up their blooms. Next year we may hope to see a pure white form of this Iris, and let us hope that it will prove to have a stronger constitution than the type. It is said to have appeared among seedlings in a garden.

Next in order of time comes an Iris, which was named *Histrio* from the fact that its flowers are so brightly and conspicuously blotched and splashed with deep blue on a pale blue ground that the colours appear almost to have been laid on with a brush. It is said to be distinguished from *histrioides* by the fact that its leaves are of some length before the flowers appear, while *histrioides* throws up its bloom simultaneously with the leaves. This distinction is of doubtful value, and the probable explanation is that both the one and the other are merely local forms of the same thing.

A very early flowering dwarf Iris of this group is that named by Foster *I. reticulata sophenensis*. The colour is

a peculiar blue-purple, without the blotches so characteristic of the two species just mentioned.

These three are usually closely followed by the red-purple *I. Krelagei*, which in its turn is succeeded by the well-known deep violet *I. reticulata*—the so-called type. *I. Krelagei* may be a very poor thing, scarcely worth growing, but there are some forms which have magnificent, broad-petalled flowers of a shade approaching crimson. Both this and the type increase fast when the conditions suit them, and should therefore be frequently lifted and replanted. If this is not done, the flowers become so crowded that the outline of each is lost and half the beauty gone. On the other hand, the sight of a bed of several hundreds of these exquisite flowers of brilliant violet and gold gleaming amidst the grey-green mist of glaucous foliage does indeed rejoice the heart on some sunny morning at the end of February or early in March.

The method of frequent lifting has another advantage in that it enables steps to be taken to counteract the ravages of a deadly fungous disease which first shows itself in the shape of inklike stains on the outer coat of the bulbs. Soaking for about two hours in a solution of formalin of the strength of one in three hundred parts seems to check the disease.

As to cultivation, all that can be said is that shelter from wind is advisable for such early flowering bulbs, and that it is impossible to say that any particular soil is more suitable than another. The bulbs appear to be most capricious, and except that humus in some form may with advantage be added to a very poor soil, no directions can be given. It may be useful to remember

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that with care the bulbs can be moved successfully when in flower. This enables seedlings and chance mixtures to be sorted out, a process which is extremely difficult later on, when the foliage has died down and the position of any particular bulb in a group can no longer be ascertained.

The above-mentioned members of this group all have four-sided leaves, but there is one species, *I. Bakeriana*, named after Mr. J. G. Baker, the late keeper of the Kew Herbarium, in which the leaves have eight sides, or rather are round with eight raised ribs. The flowers are small, but have a delightful velvety texture. The colour is produced by deep violet dots and broken veins on a white ground, which becomes entirely obliterated in the deep self-coloured tip of the blade. This beautiful little species blooms in January or early in February, and is indeed worthy of some sheltered nook in the rock garden or even the protection of a cold frame.

I. Danfordiæ, the one yellow-flowered species of the group, is a little dwarf Iris, of brilliant colour, remarkable for the almost total disappearance of the standards.

Indications are not wanting that other Irises of this class may yet be found when Asia Minor becomes more thoroughly explored. Farther East—in Turkestan, to be more exact—two curious Irises have been discovered which may or may not belong to this group, *I. Kolpakowskiana* and *I. Winkleri*. It is greatly to be hoped that they will soon be brought once more into cultivation, and their position in the genus settled.

I. Sisyrinchium can hardly be said to belong to this

PLATE II

I. LONGIPETALA—A FINE APOGON IRIS

group, but, as its bulbs have netted coats, it may perhaps be just mentioned here. It is distinct from all other Irises in its method of increase and in the extreme frailty of its flowers, which last only from twelve to four on a sunny day. Its habitat extends from Portugal to Kashmir, and its colour varies through all shades of lavender, lilac, and purple. It has been said to have the additional merit that, if you do not like the flower or the habit of the plant, you can eat the bulb.

CHAPTER IV

BULBOUS IRISES (*continued*)

II. THE XIPHION GROUP

THIS group contains the so-called Spanish and English Irises, both of which are well known, and a certain number of wild species akin to them that might well be more often seen in gardens.

I. xiphium comes from Spain and Portugal, and affords brightly-coloured masses of flower about the middle of June. It delights in a warm, rich soil, and the bulbs should be lifted occasionally when the foliage withers, and separated before overcrowding occurs to diminish the size of the flowers. In recent years a number of very fine large-flowered hybrids have been introduced into cultivation by the well-known Dutch firm of C. G. Van Tubergen, Jun., of Haarlem. The flowers of these hybrids are of great size

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and substance, and moreover begin to open about the end of May, a full fortnight before the majority of the older forms. It would be difficult to specify as particularly worthy of notice any of these new hybrids, for all those that have up to the present been distributed well deserve a place in any collection.

Of the older and cheaper varieties, mention must be made of Thunderbolt, a very vigorous plant with flowers of a peculiar mixture of brown, yellow, and purple; of Leander, a sweet-scented yellow flower; of *lusitanica*, which is perhaps a wild species and has wide petalled flowers of yellow and white; and also of "*filifolia*," which is remarkably early, with large blue flowers. The name *filifolia* is misleading, because it already belongs to a wild species which has only just been reintroduced into cultivation, a species that is quite distinct from the Spanish Iris.

Those gardeners whose soil is too cold and wet for the success of *I. xiphium* must console themselves by the reflection that it is probably admirably suited to the Pyrenean *I. xiphioides*, or English Iris. This species has larger flowers than the Spanish Iris and stouter foliage. It has been in cultivation for centuries, and now exists in a host of colour varieties. It is hard to advise others in the choice of colours, and the best method is to note down the names of the most pleasing varieties in the groups that will certainly be seen at shows in July. Some will admire the flecked or mottled forms, by which the lover of self colours will not be attracted, and each must choose for himself.

It is a thousand pities that the most glorious of all the xiphion species, *I. tingitana*, is such a shy flowerer. The

broad falls are light blue with a brilliant central line of gold colour, and the standards of a slightly deeper shade of purple. To ensure success the bulbs must be very liberally treated with old manure, placed some inches below their bases, and given the warmest and most sheltered corner of the garden. Even then success is not certain, for a late spring frost may kill all our hopes of seeing *I. tingitana* in flower.

The Algerian *I. juncea* is valuable for its deep yellow colour, but it is rather tender, and often fails to ripen its bulbs after flowering. *I. Boissieri* is even more difficult to keep, but it is worth an effort for the sake of its brilliantly coloured flowers of contrasting blue and red purple, set off by a scanty beard of golden hairs. With one rare exception, namely, *I. Tubergeniana*, *I. Boissieri* is the only bulbous Iris that can boast of a conspicuous beard.

CHAPTER V

BULBOUS IRISES (*continued*)

III. THE JUNO GROUP

THIS section is based upon the peculiarity of the structure of the bulbs, which still retain some thick fleshy roots even in the resting state.

The first to flower is *I. alata* from the western shores of the Mediterranean. It is now so largely imported that bulbs can be purchased for little more than a penny apiece, and at this price it may be well worth a shilling or two to ensure

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a display of *I. alata* in November, December, and January. These freshly imported bulbs, that have been thoroughly ripened in the heat of the southern sun, can be relied upon to flower well, especially if they can be obtained with their fleshy roots more or less intact. Bulbs without these roots should be refused, for the resultant plants will be weak and puny, and probably unable to develop their flowers. They do fairly well in deep pots, but it is not an Iris that readily lends itself to forcing. After flowering either in the open or in pots, the plants may as well be thrown away, for it is almost impossible so to ripen off the growth that sound bulbs are formed for the succeeding year. With careful nursing the bulbs can possibly be brought on to flowering size in about two years' time, but is it worth the trouble involved, since success is always uncertain?

The Eastern Mediterranean species, *I. palæstina*, is an even worse offender in this respect; its bulbs are weaker than those of *I. alata*, and even fresh bulbs cannot all be relied upon to flower.

As to the actual flowers, those of *I. alata* are usually of a deep blue-purple, and should be of large size, about four inches or more across. The breadth of the conspicuously winged falls is some compensation for the minuteness of the horizontal "standards." White-flowered forms of the Iris are not infrequently found, and there is also obtainable a form called *marginata*, in which the deep blue falls have a distinct, light edge. In *I. palæstina* the flowers are smaller and vary greatly in colour, from a fairly deep blue through turquoise to green and greenish-yellow.

In Eastern Asia Minor there occur several forms of a small and wonderfully beautiful Iris, called *I. persica*, which at

its best has flowers of white and sea-green, with a brown-purple patch on the blade of the falls. It has been in cultivation in England for some centuries, but is apparently becoming rarer owing to the fact that it is not a strong grower.

In light, sandy soil it is most disappointing, but would probably do better in heavy loam. Even then it would need to be kept dry and well ripened in summer. The chief difficulty with regard to it probably lies in the fact that the trade supplies are grown in heavy soil and lose all their roots when torn up for sale. The result is that newly purchased bulbs are weakly, and often exhaust themselves by attempting to flower in their first season. This should be discouraged by removing the bud, if it is hoped to establish the plant. It will then probably form a stronger bulb for the following year, together with an offset or two.

Besides the type there are at least two varieties which are well worth growing and which appear to have better constitutions, namely, *I. Tauri* from the Cilician Taurus and *I. Heldreichii* (or *stenophylla*) from a somewhat lower elevation in the same neighbourhood. *I. Tauri* has rather small but brilliant flowers of deep purple lined with gold, while those of *I. Heldreichii* are a combination of blue-black blotches on a grey-blue ground.

Besides these there are other colour forms of *I. persica* that are much more rarely seen in cultivation. A variety, *purpurea*, is wholly of a warm claret-purple colour. One called *galatica*, from the region in which it is found, has flowers of pale, dingy yellow, tipped with brown-purple, and another with large flowers of silver-grey flushed and

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blotched with dull purple has been named Sieheana, after its discoverer, Herr Siehe.

So far the Juno Irises enumerated are all stemless, though the flowers are raised on perianth tubes of some length; moreover their flowering season is over by the middle of March. As the season advances, so also do the stems of the Junos increase in height. The persicas are usually followed, and often overtaken, by the Mesopotamian *I. sindjarensis*, which grows about a foot high, and opens in succession five or six rather small flowers in the axils of the leaves, which are arranged on alternate sides of the stem, much in the same way as in the Maize or Indian Corn. The colour of the flowers is usually some shade of blue. In some examples the tint is deep, in others it is very pale, or it may even be a beautiful turquoise colour. There is also a pure white form of this Iris in cultivation. *I. sindjarensis* is not perhaps a very striking Iris, and it was left to the ingenuity of Mr. J. Hoog, of the firm of C. G. Van Tubergen, of Haarlem, to combine the orange central ridge of *I. persica* with the stronger constitution and larger flowers of *I. sindjarensis*. The resulting hybrid known as Sindpers is one of the most beautiful of all bulbous Irises. The exact shade of colour seems to vary from season to season and in different soils, but at its best it is a most brilliant turquoise blue. It is a most desirable Iris, and one that is not difficult to grow or to keep. It is also very floriferous. Another cross, Sindpur, was raised from *sindjarensis* fertilised by pollen of *I. persica purpurea*. It is dwarfer than *I. sindjarensis* and very floriferous, with flowers of a dark purple colour. One form is paler, and has been aptly christened Amethyst. The reverse cross, Pursind,

is scarcely so pleasing, for the combination of reddish-purple and grey does not produce a brilliant colour.

Before *sindjarensis* and its hybrids are over, the brilliant *I. Rosenbachiana* from Turkestan should be in flower. It is unfortunately rarely seen, and as its price is rising, it is presumably difficult to keep even in Holland. Early in March there appear through the bare ground broad, pale nipple-shaped shoots which soon show the tips of the green leaves; then in a day or two, if the weather is at all warm or sunny, up shoots the flower on a long 4-inch perianth tube. It is usually some combination of white, crimson, and gold, but this is a very variable Iris, and some more recently discovered forms have a very wide range of colours. Each bulb may produce as many as three flowers in succession.

Shortly after this, the white form of *I. orchoides* usually opens, closely followed by *cœrulea* and *sulphurea*. Why the colour varieties should usually bloom in advance of the golden-yellow type it is difficult to see, but this has been the experience of some years' cultivation. Each of these, when well grown, produces five or six flowers, which open in succession down the foot-high stem. Simultaneously we may expect to see the brilliantly coloured *I. Warleyensis* of deep purple with a yellow central patch, blue crest, and pale edges to the falls, and the more delicately coloured *I. Willmottiana*, with its deep lavender flowers, conspicuously blotched with white and broad, glistening leaves of deep green.

Lastly, and perhaps most beautiful of all, comes *I. bucharica* from Bokhara, with creamy-white flowers with clear golden-yellow tips to the broad falls. This grows

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about 15 inches or more in height, and a clump of this Iris in bloom with several flowers on each stem is a wonderful sight in the middle of April.

It might be thought impossible that such plants should be absolutely hardy. On this point it may be said that very severe late frost may nip the flowers that are actually open at the time, but the unopened buds are uninjured, and quickly open to fill the place of those that are over.

There are many other rare Juno Irises, some of which have never yet been introduced into cultivation. The mountains of Turkestan and Bokhara seem to be a perfect treasure-house of floral gems, but until they become more accessible, we shall presumably not know all their contents. Mention may, however, be made of one or two of the rarer species which are occasionally met with in cultivation. *I. Fosteriana* from the Afghan frontier is distinguished by its yellow falls and deep purple standards, which form a most striking contrast. Of *I. Tubergeniana*, a yellow-flowered species, the most conspicuous feature is the distinct beard of scanty hairs. Neither of these is very easy to keep alive, and there is indeed some danger of their dying wholly out of cultivation. Plants of both species seem to weaken themselves so much by the effort of flowering that it is some years before the bulbs become strong enough to flower again.

The tall Junos do not seem to be fastidious as to soil, so long as it is moderately rich and not too dry while growth is active. Sir Michael Foster advised a heavy rather than a too light soil, but they can certainly be grown with very fair success in well-enriched sand.

CHAPTER VI

THE ONCOCYCLUS IRISES

MOST gardeners with any enterprise have at some time or other invested in a rhizome or two of the mystic *Oncocyclus Irises* and as many—at least in England—have been grievously disappointed with the result, if not immediately, then certainly in the end. The truth is that these inhabitants of Syria and Persia are homesick for the baking sun of their native haunts, and never consent to stay long with us. Even if they flower, they seem to cry out as did the Roman gladiators, “*Morituri te salutant*” (The doomed salute thee), and few escape their doom. However, they count among their number the largest flowered of all *Irises*, *Gatesii*, whose standards and falls are five inches and more across, and the most beautiful of all, *Lortetii*, which is delicately veined and minutely dotted with purple and crimson on a creamy ground. The circular standards incline slightly inwards so as to meet, and the falls reflex to show their broad beards and curl so far back as to touch the stem. Indeed, the whole flower seems to hug itself with delight in its own beauty.

What would we not give to have *I. iberica* flowering as freely with us as does *I. pumila*? And yet in its native haunts in the Caucasus, and even in gardens in that region, it is every bit as floriferous. A photograph of a long edging of these *Irises* with their white standards and curious, hanging concave falls puts one out of conceit with the few scattered

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flowers that reward in England much pains in preparing the soil and in choosing a site, and no small outlay.

Those who think they can see design in everything would perhaps be puzzled to account for the weird shape of the fitly named *paradoxa*. It is indeed the "unexpected." The standards are normal, but the falls are more like the back of an elongated humble-bee than anything else. To be prosaic, they are strap-shaped with a rounded tip, and not more than half an inch wide. The whole length and width is covered with thick, velvety hairs of black purple, except that there is left uncovered near the tip of the falls a mark of the shape that heralds might call a chevron. This is of a dull pinkish colour. No one who has ever grown and flowered this Iris wishes to be without it, and therefore its price grows and grows, far more readily, indeed, than the plant itself.

One of the rarest and also one of the most beautiful Irises of this section is the clear yellow *urmiensis* from Northern Persia. It is fervently to be hoped that the Persians will one day reduce themselves and their distracted Government to order, for the present unrest in Persia—a truly journalistic euphemism—makes it almost impossible to get fresh supplies of this Iris, and we can only speculate as to whether its brilliant colour would have any marked effect on hybrids obtained from its pollen.

It is always a matter for surprise that the gardeners of the south of France seem to have chosen for cultivation on a large scale the gloomiest of all the *Oncocyclus* Irises. *Susiana* is sold in all the flower markets of the south, and sometimes the great buds find their way on to the barrows in the streets of London. The present writer has before

PLATE III

I. SUSIANA—A TYPICAL ONCOCYCLUS IRIS



now bought a handful at a penny apiece, all of which unfolded magnificent flowers, in shape and size at least, if not perhaps in colour. For it cannot be denied that there is some truth in the criticism that this Iris looks as though it were made of wet newspaper on which the type had run.

If any still wish to try their luck with these mysterious plants, let them contrive a bed in the sunniest, hottest, and driest corner of their gardens. There let them make up a bed of rich soil, but without fresh manure. If the soil is heavy, so much the better. The surface should slope sharply to the south, for this will help to throw off superfluous moisture. The rhizomes will probably be obtained in the autumn, but it is important to get them early, for about October they begin to shoot whether they are in the ground or out of it. The best thing to do is to pack them up in a box just as they arrive and send them off at once to some cold storage establishment, with instructions that they should be kept at a temperature of about 30° until the last week in February. (If there is no local establishment, application might be made to the Imperial Cold Storage Co., of South Tottenham, London, where the experiment was first made by the author.) They may then be planted on the prepared bed, and when the flowers are over, the beds must either be covered and kept dry till growth begins again, or the roots must be lifted, dried, and re-stored.

Having mentioned the chief members of this group, we will pass over the numerous interesting and rarer species, such as *Bismarckiana*, *Elizabethæ*, *Mariæ*, and *lupina*, which will all be found attractively described in catalogues, and which, when they do flower, are weird and wonderful rather than really beautiful. Fortunately there is a closely

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allied group—Regelia—whose members are distinguished by being far more floriferous and far more amenable to cultivation in England. These Regelia Irises are so called after a certain Dr. Regel, who, as Director of the St. Petersburg Botanic Garden, was able to introduce into cultivation so many plants from Central Asia. The finest is *Leichtlinii*, with flowers of a fawn or brown colour shot with electric blue and gracefully waved at the edge, but the best known is *I. Korolkowii*, after one of the numerous Russian generals or explorers, who have enriched our gardens and come near to breaking our jaws. Iris lovers may be thankful that Przewaldski found no new Irises, though he brought back many specimens of Mongolian and Central Asian species. *Gentiana P-r-z* may be as good as its name is bad, but one such name is enough.

When even Sir Michael Foster in his marvellous garden on the south slope of a hill at Shelford found that the *Oncocyclus* species could not be induced to settle down there permanently, he set to work to infuse as many of their characteristics as possible into more vigorous plants. He experimented in two directions, and in both met with some success. Plants of the Regelia section fertilised with *Oncocyclus* pollen produced hybrids far stronger and more vigorous than either parent. The flower combined the shape and to some extent the colouring of the father with the floriferous character and general habit of the mother. Similar hybrids raised by the Haarlem firm of Van Tubergen are now widely distributed, and, though scarcely sufficiently distinct one from another, they form a very valuable addition to gardens.

It is difficult to specify any particularly good specimens

among these hybrids, but the warm, golden-brown colour of Charon, the size and shapeliness of Persephone, and the evident traces of *Leichtlinii* in Hera are all worthy of mention.

Foster also managed to combine *iberica* and *paradoxa* with various bearded Irises, such as *pallida*, *variegata*, and possibly *sambucina*. The habit of these hybrids is intermediate between the two parents; they are stronger than the *Oncocyclus*, but hardly so vigorous as their other parents. In some the influence of *paradoxa* is most marked. The falls become narrow and have a broad, thick beard of blackish hairs. In *iberica* × *pallida*, of which there were no fewer than fourteen varieties, the flowers call to mind those of both the parents. The colour is rather that of *pallida*, in which species the orange beard is, however, overcast with the dingy brown of *iberica*.

Since Foster's death several of these hybrids have fallen into the hands of dealers, and some have been rechristened. At Shelford the best of them had Persian names, obtained from some professor of Oriental languages, who had also supplied the interpretation thereof. Unfortunately this was lost, but names such as Dilkush remain. These plants are undoubtedly very interesting, but scarcely worth the inflated prices that are now asked for them.

Another interesting result of the same kind was obtained by the present author by combining the colour and habit of a claret *olbiensis*—a dwarf bearded Iris from the south-eastern corner of France—with the conspicuous veining of *Korolkowii*. Here, too, the yellow and the blackish beards combined to form a dingy brown, and apparently followed no law of Mendelian dominance. Nearly every

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feature in all these hybrids is a kind of compromise between the characteristics of the two parents.

All these hybrids are more amenable to ordinary cultivation than the pure *Oncocyclus* and *Regelia* species. Indeed, those with *Pogoniris* blood in them may be left in the open ground all the year round, but the *Regelio-cyclus* hybrids are certainly the better for an annual lifting when the leaves begin to wither early in July. They should not be planted again until October.

For those who contemplate hybridisation, it may be as well to insert here a warning that the *Oncocyclus* blood does not tend to produce clear, bright colour. It imparts a certain gloom and dinginess, which is peculiar and undoubtedly interesting scientifically, but from the purely horticultural and decorative point of view, it is useless. Moreover, *I. Leichtlinii*, which is in some ways one of the most beautiful of all Irises, seems always to produce the most indescribably ugly offspring when crossed with any bearded Iris. This at any rate has been the characteristic of all the specimens that the author has either raised himself or seen in the gardens of others.

CHAPTER VII

THE EVANSIA SECTION

THE members of this group of rhizomatous Irises are distinguished by the fact that the falls are provided with a more or less jagged crest that takes the place of the beard in other Irises.

All the species are well worth growing. The earliest to flower and the plant that has been longest known is *I. japonica*. Unfortunately in most parts of England this is a greenhouse plant, not because it is not hardy but because it will not flower out-of-doors, owing to the fact that in March and April, when it should flower, we do not get enough heat to enable it to throw up its stems. In pots, however, or in a border in a cool house this Iris is well worth growing. The broad, deep, green leaves with their polished surface provide a delightful background for the much branched stem with its numerous pale, lilac, crested flowers. The edges of the petals are waved and crimped, and the name *I. fimbriata*, that has also been applied to it, is not inappropriate.

When this Iris is grown in pots, it flowers best, probably, if it is left alone and allowed to become somewhat pot-bound. Water may be withheld when growth becomes less active after the flowers are over, and the rhizomes will then ripen.

The individual flowers are about 3 inches across, flat in outline, owing to the fact that the standards are spreading rather than erect. Each flower lasts only about twenty-four hours, but each spathe contains three or four buds, and the numerous heads of flowers on the stem prolong the display for several weeks.

Varieties with variegated leaves are said to exist, and will doubtless appeal to those who appreciate such freaks.

A better Iris from the garden point of view is *I. tectorum*, so called because it grows on the ridge of thatched roofs in China and Japan. This has large flowers of the same shape as *I. japonica* and the other members of this class.

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but is of a deep blue-purple colour, slightly mottled with blotches of a darker shade. A conspicuous feature is the jagged crest, which is white with brown markings. There appears to be something about the constitution of this Iris that we do not yet understand. It comes very readily from seed, and flowers within eighteen months of the first appearance of the seedlings, but in subsequent years vigorous plants are apt to lie almost dormant, or at best to produce weak growths. If it will grow on roofs, it can hardly be a gross feeder, and yet it seems to do best when frequently transplanted and grown in good light soil. The transplantation should of course take place immediately the flowers are over, or even before they have faded, and the position chosen should be warm and sheltered.

Besides the type, there is a beautiful white-flowered form, the crest of which is marked with gold. It is not usually quite as vigorous as the type, nor does each stem produce as many flowers, but, when well grown, it is one of the most beautiful of all Irises. It resembles the type in coming easily from seed, and is extremely accommodating in that the seedlings all come pure white. At any rate, this was the result of raising over a hundred seedlings, among which there was not the slightest variation. There is one appeal that must be made on its behalf, and that is that it should always be called *I. tectorum alba* instead of the monstrous *I. tectorum album* of the catalogue writer.

The Himalayan cousin of *I. tectorum* is distinctly disappointing. *I. Milesii* promises great things by its vigorous growth and yard-high leaves. Up come the tall stems, overtopping even these big leaves, and at last there unfold the insignificant flowers, barely half the size of those of

I. tectorum. They are curiously mottled with two shades of pale and deep red-purple, and the characteristic crest of the group is conspicuous. The gardener's obvious course is to hybridise *I. Milesii* with pollen of *I. tectorum*, and this is perhaps one of the few cases where a hybrid Iris would be better than the parent. But *I. Milesii* has some deep-rooted objection to being hybridised, and in spite of the many attempts that have been made no hybrid of this species is yet known. With its own pollen it is, on the other hand, readily fertile, and it sets seed in abundance. There is in commerce a form called *magnifica*, but any plant worthy of this name is difficult, if not impossible, to obtain.

Having mentioned the largest of the Evansia, we will take next the smallest, *I. gracilipes*, another Japanese plant. It likes a somewhat cool position in moist soil, where its slender rhizomes will not be parched by drought. It has narrow, grassy leaves 9 inches or a foot in height, and a slender, branching stem of about the same height, and three heads of flowers. The latter agree in shape with those of *I. tectorum*, and are of a delicate pale pinkish-lilac colour. This graceful little plant deserves to be far more widely cultivated than it appears to be. That it is little known is perhaps due to the fact that it is not always quite easy to establish. This is, however, hardly a matter of astonishment, for such a frail little rhizome can scarcely be expected to resist the effects of alternate frost and thaw unless it is firmly anchored in the ground. It is therefore inadvisable to shift this plant when growth has finished for the season. It should rather be moved when growth is active.

Of the southernmost representative of the Iris family

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on the mainland of Asia, namely, *I. speculatrix*, little need be said, for it is not now in cultivation, although a supply of seeds has lately been obtained from Hong-Kong, where the Iris is abundant on the hills behind the town.

The two remaining members of the group are American, namely, *I. cristata* and *I. lacustris*. The former grows in damp gravel beside streams in the Central States, and the latter, which is merely a dwarf copy of *cristata*, is only found on the shores of Lake Huron. They both creep rapidly over the surface of the ground by means of running rhizomes, and both can be easily propagated by taking off the side-growths, which will be found ready to root shortly after the flowers fade. These two Irises have a form of seed that is found in no other species at present in cultivation, but the curious appendage which is attached to them when fresh does not seem to assist in germination, but rather the reverse.

The flowers of *I. cristata* are of some shade of lilac with a low but distinct crest running along the centre of the haft of the falls. The stem is only an inch or so in length, but the tube is about twice as long. The flowers of *I. lacustris* only differ in being somewhat smaller, and usually of a darker shade of colour.

CHAPTER VIII

“GERMAN” IRISES

THE name “German,” commonly applied to a very large number of Irises, is in no way specially appropriate. As a

matter of fact, very few Irises are found wild in Germany, and those that are natives of that country are not the parents of the plants now known by the name.

The explanation lies in the fact that, roughly speaking, all the Irises comprised under this title resemble, in growth and shape, the common purple flag, of which the botanical name is *I. germanica*. Even as applied to this plant, the name is not particularly appropriate, for no certain instance is known of the plant growing wild anywhere in Germany, while forms of it extend from Spain to Nepal. Moreover, its various forms appear to have been long in cultivation, and it is impossible to say that the plant is growing where no human agency is likely ever to have placed it.

For garden purposes, “German” Irises are usually divided under such names as *germanicæ*, *pallidæ*, *variegatæ*, &c., according as they most closely resemble one or other of certain supposed wild species. Without entering into the botanical details of these various species, it may be useful to give here a list, under the usual headings, of the most effective garden forms. Endless varieties are in existence, and the number is constantly increasing, though a new name does not always mean a new Iris.

The subject of the ultimate parentage of this group of plants is very difficult, and though the method of solution that suggests itself, namely, breeding experiments, is obvious enough, it is unfortunately almost impossible in England, owing to the fact that most of the plants which appear to be wild, and the possible parents of which we are in search, prove in our gardens to be almost invariably sterile. Thus the so-called type of *I. germanica*

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is nearly always defective in its sexual organs or else its pollen appears to be imperfect, with the result that, though large capsules sometimes form and develop, they prove in the end to contain nothing but undeveloped ovules. In Southern Europe, however—in the south of France, for example—the problem might be solved, for there apparently *I. germanica* is fertile, to judge from the numerous colour forms of it that may be found in cultivation. It would, for example, be extremely interesting to know the result of crossing *I. germanica* and *I. pallida* with pollen of *I. variegata* and *vice versa*, for it is almost certain that the garden forms with yellow standards and brown falls are derived from *I. variegata*, but we do not know the origin of such plants as *I. sambucina*, *I. squalens*, and *I. lurida*, nor even whether they are really good species.

THE GERMANICA SECTION

The common purple flag is too well known to need much description, but there are other forms of it, either local or of seedling origin, which deserve to be much better known than they usually are. For instance, a dwarf and rather bluer form comes from Fontarabie, while the giant-flowered *macrantha* was sent to Foster from Amas in Asia Minor. In colour it also is slightly bluer than the ordinary *germanica* type. Quite recently MM. Vilmorin-Andrieux of Paris have introduced an improvement even on Amas under the name of Oriflamme. This is indeed a noble plant, growing nearly 3 feet high in good soil, and bearing immense flowers. In colour it differs little, if at all, from the two shades of blue-purple of Amas.

THE GERMANICA SECTION 37

Another good "germanica," of a totally different shade of colour, came to Foster from Kharput in Asia Minor, and is named accordingly. It is remarkable for its distinctly red-purple colouring—the standards being, as usual, lighter in shade than the falls—and for the great length of all its segments. If it has a fault, it is that the standards are of such delicate texture that they very easily feel the effects of rough weather, and collapse. It should therefore be grown in a rather sheltered position well back in a border, where its flowers may get some protection from the wind.

The darkest coloured of all the true germanicas is *I. nepalensis*, whose origin is sufficiently indicated in the name. It is about the same height as the common germanica, perfectly hardy, and of a deep red-black colour, the standards in this case being practically of the same shade as the falls.

Somewhat similar to this is *I. Kochii*, of a dark black-purple colour, nearly uniform throughout the whole flower.

A very beautiful, almost blue relative of *I. germanica* has been introduced under the name of *I. Madonna*. It is probably a wild plant, and, coming from a southern latitude, it seems unable to grow with the vigour of the other kinds in our cooler climate. It is somewhat dwarf, and both falls and standards are of a distinctly blue shade of purple. It is still, unfortunately, somewhat rare, but will make a notable addition to any group of German Irises by reason of its unique colouring. Whether the author is justified or not in holding the opinion that the well-known *I. albicans* is really the albino form of this *I. Madonna*, the fact remains that the former is the best pure-white bearded Iris that we possess, although it is dwarfer and scarcely perhaps so robust as *I. florentina*, with somewhat grey-

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or blue-white flowers and a more widely branching stem. In addition, there is also in existence, though it is more rare in cultivation, a white form of *I. germanica*, which corresponds closely to the *atropurpurea* or deep violet-black form.

Taken as a whole, the *germanicæ* are the earliest to flower of all the so-called German Irises, and are at their best in May—at any rate in the south of England. Unless they are banished to sunless corners or choked in the “wild garden,” they can usually be relied upon to flower well. It is seldom that they suffer from such a catastrophe as befell them this year (1911), when the extremely hard frost and cutting east wind of the first days of April literally nipped all the buds of the typical *I. germanica* that were not growing in very sheltered positions, while the stems were still only a few inches long, and could only be found by cutting open the bases of the tufts of the leaves.

THE PALLIDA GROUP

This group takes its name from some South European plants, which, as compared with *germanicas*, are certainly paler, both as regards the flowers and the foliage, which is very glaucous. They are also distinguished by the curious spathes, which assume the appearance of whitish paper or parchment even before the tips of the buds emerge from them. The typical *pallida* has a tall stem that grows to a height of 3 feet and is closely set in the upper part with numerous, pale lavender flowers, which, in the sunlight, at any rate, have a faint, rosy tint. The conspicuous beard is composed of thickly-set orange-coloured hairs. An even

more striking plant is the Dalmatian *pallida*, sometimes known as Princess Beatrice. The colour is very similar to that of the type, but the flowers have more substance and the plants have a sturdier appearance, although the stems do not rise to such a height, nor do they carry quite so many flowers. For some reason or other, this plant is slow of increase. It seems to put so much of its strength into producing its huge flowers of wonderful substance that it has little energy left to form much new growth for succeeding years.

In this respect, it is surpassed by a rather darker-coloured form of similar habit, known as Albert Victor. This grows more freely, and it is a pity that it has not quite such a clear, bright colour-scheme as Princess Beatrice.

However incongruous it may seem, there are some *pallidas* that are distinctly dark in colour. For instance, Foster had one form from Monte Brione, of which the flowers are a uniform dark red-lilac or lavender-purple, and in most collections similar forms may be found under varying names.

To this group, too, belong the numerous varieties, whose flowers are in colour an approach to pink. One of the best known, of a pale shade, is Queen of May, Her Majesty being somewhat deeper, and the colour perhaps not quite so clear. The newer Trautlieb is of a soft rose colour. A dwarf pink, and one moreover that is very floriferous, is Mrs. Allan Grey, which was a hybrid obtained by Foster by fertilising *I. Cengialtii* with pollen of Queen of May. *Cengialtii* itself and its variety Loppio come from the slopes adjacent to Monte Baldo on the north-eastern side of the Lago di Garda. *Cengialtii* with its clear blue

purple flowers is the more charming of the two, and very beautiful hybrids of it can be obtained by fertilising it with pollen of the typical *pallida*. The result is usually a series of plants intermediate in habit between *Cengialtii* and *pallida*, very free flowering, of various shades of distinctly blue-purple, in some cases set off with a most striking orange beard.

The varieties of *pallida* are endless, but perhaps the present list may be closed by a reference to two plants which have in them a good deal of blood that is not *pallida*, but which are conveniently taken here. They are both rosy-purple of a much deeper shade than Queen of May, and may be obtained under the names of Madame Pacquette and Cythérée.

THE VARIEGATA GROUP

The wild *I. variegata* is chiefly found in Austria and Hungary, and has clear yellow standards and falls that are more or less completely covered with dark red-brown or black-brown veins, which often coalesce and run together. From this come all the varieties with clear yellow standards of varying shades and usually with brownish falls. It is commonly supposed that Innocenza is a white-flowered form of *variegata*, and it certainly has many of the characteristics of the type. The pure white segments are slightly reticulated at the base, and the fall has a golden beard.

Of the variegatæ a good example is Gracchus, with particularly bright, clear yellow standards and falls closely veined with red-brown on a white ground. John Fraser

PLATE IV

I. JACQUINIANA—A GOOD “GERMAN” IRIS

is deeper in colour, and the falls are distinctly of a rich mahogany shade. Maori King is even more richly coloured, and the falls are edged with gold, while the finest of all is perhaps King of Irises, a recent introduction from Germany. In several instances the brown veins have entirely disappeared from the falls, giving us such clear yellow varieties as aurea (which must not be confused with the beardless species from Kashmir) and Mrs. Neubronner.

With the other sections of "German" Irises we are on less certain grounds, when we attribute their origin to any wild species, but it may be convenient here to keep the conventional names for the groups.

THE AMÆNA GROUP

This name has been given to those Irises of which the standards are pure white while the falls are of some shade of blue or violet. Of these one of the most striking is Thorbeck, with deep velvety-violet falls, contrasting strongly with the white standards. For this, the inferior variety Victorine is often substituted, but it is not so pleasing, for the white of the standards is marred by a few irregular blotches of the same colour as the falls. Even more handsome is an unnamed seedling of Black Prince, a late-flowering Iris which will be mentioned among the neglecta group. Here the standards are white, and the falls of the deepest velvety-violet with a conspicuous silvery border. The flowers closely resemble in shape the somewhat spreading outline of Black Prince. It may be of interest to record here that self-fertilised seed

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of this last gave seedlings both of the *variegata* and of the *amæna* types as well as others more nearly resembling itself in colour. In all cases the shape of the flower bore a distinct likeness to that of Black Prince, and all agreed in having a pale edge to the falls.'

In other members of the *amæna* group, the falls are veined with some shade of blue or purple on a white ground. Of this type, it is almost impossible to give names, because they are apt to vary with different growers, and there is no standard by which differences may be settled. If examples must be given, Glorietta and Morpheus are names usually applied to two very striking varieties.

THE NEGLECTA GROUP

The above-mentioned Black Prince may perhaps be taken as a good representative of the neglecta section, the members of which are characteristic by having both standards and falls of some shade of blue, though the former are always of a lighter shade than the latter. Another very good neglecta variety has been called Perfection, which is both earlier and taller than Black Prince, but not quite so rich in colour.

THE SQUALENS GROUP

This group comprises some of the most richly coloured and also some of the most sombre of all the "German" Irises. The standards seem always to have yellow and purple of various shades struggling for the mastery, with the result that the colour is of a curious lurid tint that is not easy to describe. The falls are darker, of some

THE PLICATA SECTION 45

shade of purple or brown-crimson. Of this section the best-known representative is perhaps *Jacquiniana*, with a combination of coppery-purple and velvety-maroon. A new introduction by Vilmorin, Prosper Laugier, is even finer, being both larger and, if anything, more richly coloured. A much smaller flower, but one that well repays close inspection, is borne by an *Iris* sometimes grown under the name of *Abdul Aziz*, though such forms are so easily raised from seed, that names are really somewhat misleading. In this, the lilac or deep lavender standards appear to be sprinkled at the edge with gold dust, and the effect of the sunlight on this edge is delightful.

THE PLICATA SECTION

The typical *I. plicata* has white flowers delicately veined at the edges with pale blue-lilac. It is probably, if not certainly, of hybrid origin, and the best-known garden forms are *Madame Chereau*, *Mrs. Reuthe*, and *Jeanne d'Arc*, though many of the best in existence have probably received no names at all, or names that are confined to the gardens where the plants were first raised from seed and where they are still grown.

CHAPTER IX

OTHER BEARDED IRISES

IN this chapter it is intended to notice some of the various bearded species that do not readily find a place in the definite sections of the previous chapter.

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First in order of flowering after *I. pumila*, which will be mentioned elsewhere, is *I. chamaeiris*, to one or other of the forms of which belong nearly all the varieties of dwarf Irises, usually known as *I. pumila*. Roughly speaking, when the stem is obvious, the Iris is not a form of *pumila* but probably belongs to *I. chamaeiris*.

Another dwarf Iris of many synonyms is *I. aphylla*, to which all such names as *bohemica*, *hungarica*, *biflora*, *Fieberi*, must be referred. Its distinguishing mark is the fact that the stem divides almost at the ground line.

An early-flowering Iris of uncertain origin, but of considerable garden value, is *I. flavescens*, a pale yellow-flowered and very free-blooming plant. It is said to come from the Caucasus, but this is probably a confusion which has yet to be unravelled.

The true *I. Albertii* is still rare, and is remarkable for the way in which the conspicuous broad veins stop abruptly at a straight line across the fall at the extremity of the beard. The colour of the type is a clear light purple, though a yellow form is also known in cultivation. Foster obtained a pale pearly-grey form, which is apt to flower unexpectedly at any time of year, but it is uncertain whether it is of hybrid origin or merely a seedling.

I. Kashmiriana seems to have a peculiarly unmanageable temper, for it always apparently dies out after flowering well in the first year after its arrival from the East. Its flowers are of a milky white, with falls that tend to spread rather than to droop. Foster obtained from it a beautiful hybrid, with white flowers of great substance and only a slight blue tinge, which is easier to manage, though it can hardly be said to be one of the hardiest of garden Irises.

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This is now in commerce as the Shelford variety of *I. Kashmiriana*.

There remain to be mentioned some large bearded Irises from Asia Minor and Syria, whose relationship to one another is not yet determined. The names that have been given to them are *Biliottii*, *troyana*, *cypriana*, *junonia*, and *Ricardii*. They are all distinguished by their tall stature (especially *I. Ricardii*), by their habit of flowering late, after the other bearded Irises, and by their large flowers, usually of two shades of lilac and purple. With the exception of the first two, which do well under ordinary conditions, none of them are quite easy to manage, and they seem to want more heat in summer than our climate usually vouchsafes them. Several hybrids have been raised, notably *Caterina*, *Carthusian*, and several fine hybrids, which have come from *Ricardii* when crossed with various "German" Irises. These latter have been raised in France and are not yet in commerce. The flowers are larger than those of any of the ordinary German Irises, and in a warm district in heavy soil they should prove valuable acquisitions to our gardens. The seed parent, *Ricardii*, is not a very hardy plant, and has the unfortunate habit of growing during the winter only to be injured by late frosts. Later in the season it revives, but there is of course little hope of flowers being produced under these circumstances.

More is to be hoped, perhaps, from *I. junonia*. The flowers are scarcely so large as those of *I. Ricardii*, though they do not fall far short of them. The stem, however, is nearly as sturdy, and the plant has the great advantage that it behaves in winter like *I. pallida* and dies down

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entirely. The new growths are therefore later in making their appearance, and pass unharmed through the vicissitudes of our spring. The standards of *I. junonia* are of a pale blue, contrasting sharply with the much deeper purple-blue falls, which spread rather than droop.

CHAPTER X

THE APOGON IRISES

THE great division of Apogon or beardless Irises contains many natural groups of species that agree in the possession of several characteristics, either in habit of growth, in the shape of the seeds, or in the arrangement of the inflorescence. It also contains a number of species that hardly seem to form part of any group, but stand by themselves, having in common only the absence of beard. Moreover, this absence of beard is only relative, for many of the so-called Apogon Irises are distinctly downy or pubescent along the haft and on the centre of the blade. Indeed, the Austrian form of *I. spuria* was called by one botanist *I. subbarbata*, the slightly bearded Iris, on account of the presence of this pubescence, which, however, is not in any case so prominent as to lead us to confuse its possessor with the members of the bearded group.

It will be convenient, perhaps, to take together those members of the division which form natural groups, following roughly the order of their flowering seasons rather than any alphabetical arrangement. The first group must then

be that which contains *I. stylosa*. Strictly speaking, we should not use the name *stylosa*, but that of *I. unguicularis*, which is the senior by a dozen years or so. However that may be, the Iris, which is best known as *I. stylosa*, is by far the most valuable of the winter-flowering Irises. It comes from Algeria, and likes a well-drained soil containing lime, and does best when planted in a warm, dry, sheltered corner where it will escape the coldest winter winds and catch all the available sun. It thrives close up against the wall of a house, especially if that wall happens to have warm pipes on the other side. The plant is cunningly adapted for reproducing its kind even in winter. It has a very short stem, which usually does not extend above the ground level. Then come a pair of long, narrow spathes, each pair being wrapt in a sheathing leaf and containing one flower. The ovary is situated at the base of these spathes, and the ovules have thus three wrappings to keep out the cold. The flower itself is raised on a long perianth tube, which usually attains the length of 6 inches. In cold weather the buds should be searched for among the leaves—a sharp look-out being kept for slugs and snails at the same time—and picked when the flowers have risen wholly clear out of the spathes. Some care must be exercised in pulling the buds. It is easy to crush the slender, delicate tube, and a violent jerk is apt to break off the stem with perhaps two other immature buds, which will then fail to develop. If the tube be firmly grasped and pulled very gently, it is possible with a little practice to obtain the whole length of the tube uninjured. It is a joy to watch the buds quiver open in the warmth of a room on a cold winter's day. They even mistake an electric lamp for the sun, and quickly respond to its influence.

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Their scent is delightful, and the colour is of various shades of lilac, purple, or even white. In all cases there is a central band of yellow or orange extending on to the blade.

Many seedling varieties and local forms of this Iris are known, and it is a curious fact that those forms that flower earliest usually have foliage long enough to shelter the flowers, while the late-flowering varieties throw up the blooms above the foliage.

Among the late-flowering forms there is a variety with blooms of a dark reddish-purple called "*speciosa*," and various dwarf forms from the shores and islands of the Greek Archipelago. The easternmost form is again more luxuriant and has much broader foliage than the Greek plants. It comes from Lazistan, on the coast of the Black Sea at the south-eastern corner, and is known either as *lazica* or *pontica*.

The flowering season of these various forms extends from November until about the end of April, and the number of flowers thrown up by a well-established clump in a warm, sheltered position is quite amazing. If the roots are disturbed at the proper season, either in April or early in September, it seems to do no harm, but it is usually not advisable to break up a clump too much. A wet clay soil does not suit these Irises in England, even though in Greece they prosper in the stiffest clay. The heat of our summers is usually insufficient to penetrate far into the soil unless this is light and porous, and heavy soils should therefore be lightened by a liberal admixture of mortar rubble before planting *I. unguicularis*.

About the time that the last forms of this Iris go out of flower, there appear the buds of a little-known species,

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called *I. ruthenica*. It is found wild from Transylvania in Hungary to Peking and Shantung. As is only natural in the case of such a widely distributed species, local forms are numerous, and this is fortunate, for some are by no means floriferous. It is also an Iris that does not accommodate itself to the nurseryman's habit of moving most herbaceous plants in the autumn. In common with other Irises that possess only a very slender rhizome, it must be moved while growth is active, and roots are consequently being formed.

The flowers appear among the grassy leaves on stems perhaps only an inch or two or as much as 6 inches long. The spathes are usually tinged with pink, and each contains usually only a single flower. The colour is a dark blue, with white veinings about the bend of the falls. This species should form close mats of foliage not more than 9 inches or a foot high at most when fully grown, and it might be far more widely planted in rock gardens, where it is, at present, almost unknown.

Various confusions have occurred with regard to this Iris. One nurseryman in England distributed it at an exorbitant price as the American *I. Purdyi*, though a glance at the description of the latter would have shown that its flowers are always yellow. On the other hand, *I. humilis* has been sent out from Holland under this name, and the mistake is not likely to be easily discovered, for *I. humilis* is distinguished by the fact that it seldom flowers at all. However, the two can be distinguished even in leaf with a little care. The foliage of *I. humilis* is stiff and rigid and somewhat glaucous, while that of *I. ruthenica* is of more fan-shaped, drooping growth without the glaucous bloom.

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There is usually in flower before the end of April, in company with *I. ruthenica*, another equally widely distributed Iris, namely, *I. ensata*. Whenever any kind friend sends home Iris seeds from Central Asia or even plants from China, they usually turn out to be *I. ensata*. It seems to abound everywhere in Central Asia and Northern China. It is not very ornamental, but some varieties have flowers remarkable for the delicacy of their grey-blue colouring and exquisite veinings. A curious feature of this Iris is that the new growths always appear pale yellow in spring. The colour is at once conspicuous in an Iris garden, and does not occur in any other species to anything like the same extent. The flowers appear among the leaves usually before the foliage is more than half grown. In Central Asia, where the change from winter to spring is more sudden and complete than with us, this Iris appears to throw up its blooms very quickly, and they thus rise above, or at least to a level with the leaves. It is not a difficult Iris to grow, and appears to have but few likes or dislikes in the matter of soil.

Once May is reached, it becomes difficult to keep to any strictly chronological order, for this month and June are the height of the Iris season. Usually the next Apogon to flower after *ruthenica* and *ensata* is an American species which frequently goes by the name of *I. Tolmeiana*, to which, however, it is only doubtfully entitled. This is a plant with a simple, foot-high stem, and two flowers of some shade of lilac, more or less blotched or marked with yellow at the junction of haft and blade. It is nearly allied to the mountain forms of *I. longipetala*, a species possessing a taller stem that sometimes bears a side branch and always has three or four flowers in its spathe. Sir Michael Foster

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crossed these two species and obtained some very floriferous hybrids, which are now obtainable under the awkward but informing name of Tollong (*Tolmeiana* \times *longipetala*).

The true *I. longipetala* has larger flowers, the falls being veined with deep violet on a grey-white ground, and the standards being plain lilac. These two Irises and their hybrid offspring are some of the few American species that apparently succeed in calcareous soil. Foster was practically unable to grow in the wonderful Shelford garden any other of the beautiful Californian species, which with the exception of *I. longipetala* are lime-haters.

As these Californian plants have been mentioned, it will perhaps be best to give an account of them next. They are as little known as they are beautiful. Two things seem to have contributed to keep them out of our gardens. The first is undoubtedly the great difficulty that is encountered in establishing them, when transplantation is attempted at the favourite autumn season. They must be moved when in growth, and preferably when growth is just beginning in spring. An examination of the base of the side growth will soon show when the new roots are pushing out, and this is the time when plants may be shifted with success.

The only other method of obtaining these species is to raise seedlings and plant them out in summer, when they are still quite small, in light soil rich in humus and deficient in lime. Growth will then be rapid, and the plants well able to stand the winter, and some should flower in the following year. The members of the Californian group are all absolutely hardy in England, even though we might have

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expected them to be delicate. Of one species, indeed, *I. Douglasiana*, from the neighbourhood of San Francisco, the foliage is at its best in winter, and a broad clump of the evergreen leaves is a striking sight at the time when most other Irises are looking their worst, or have hidden their heads entirely beneath the surface.

The beauty of the flowers of these Irises is, however, well worth the few elementary precautions that must be taken in order to establish the plants. *I. Douglasiana* has the most bewilderingly variable colour forms, from the deepest violet, through rosy-lilac, to a pale yellowish-fawn colour. The stems produce several heads, each bearing several flowers, so that the display lasts for some weeks.

Another almost equally variable species, both in stature and in colour, is *I. macrosiphon*, which, as its name implies, has a long perianth tube. The stem may be very short or as much as 6 inches in length, and the colour seems to vary from a deep purple to pale lavender and even white. This Iris is rarely seen in cultivation, owing to the difficulty in establishing the plant to which allusion has already been made.

A closely allied pair of Californian species consists of *I. bracteata* and *I. Purdyi*. In both the flowers are yellow, the shade being somewhat deeper in *I. bracteata*, and the falls have the same curious network of brown-crimson veins. The difference between the plants lies in the fact that *I. bracteata* has a very short perianth tube, while that of *I. Purdyi* is about 2 inches in length. The leaves of the former are scanty in number and very tough, about $\frac{1}{2}$ – $\frac{3}{4}$ inch broad, while those of the latter are more numerous and only about half the width.

It is not yet certain whether these species are liable to give colour variations when raised from self-fertilised seed, but *I. bracteata* has already produced some delightful and very free-flowering forms with soft-pink flowers. The seed parent grew near *I. Douglasiana*, and it is possible that some passing bee transferred the pollen of this latter to the flower of *I. bracteata*.

These Californian species seem to run in pairs, for yet another consists of *I. tenax* and *I. Hartwegii*. These are both of slender growth, producing close tufts of narrow leaves and stems from 6 inches to 1 foot in length, each bearing about three flowers. Botanically, there is really very little difference between the two. The flowers of *I. tenax* are somewhat larger and the segments of a different shape. As a garden plant *I. tenax* is by far the more valuable. It ranges in colour from a deep claret colour, with a network of silvery veins on the bend of the falls, through lilac and pale lavender to a soft pale grey. The foliage, too, is largely evergreen, and the leaves are of some length even in the depth of winter. *I. Hartwegii*, on the other hand, has shown no sign of colour variation, being always of a pale straw shade, and is altogether a somewhat insignificant little species.

All the Californian Irises delight in a well-drained soil rich in humus, and should have full sun. They seem to abhor lime and clay.

We must now return to the Old World, to a widely distributed group of plants that are characterised by flowers of the same shape as those of *I. xiphium* (the Spanish Iris), and by the formation of the ovary, which is more or less three-sided, with a double ridge running down each corner.

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The seeds, too, of all the members of this group closely resemble one another. Of these, *I. graminea* has been in cultivation in England for at least two centuries and probably longer. Its home is in Southern Europe, and it owes its name to its close-growing tufts of grass-like leaves, among which the numerous flowers are almost hidden. It is not a very ornamental Iris, but those who like sweet-scented flowers will value this species more than most others, for its perfume is that of a ripe greengage. It is true that among seedlings some specimens are much more strongly scented than others, but a little care in selection will soon eliminate the worthless plants.

Very similar to *I. graminea*, but smaller, is *I. humilis*, which is distinguished for its habit of sulking and refusing to flower. Probably we gardeners are to blame and not the plant, but the fact remains that even the ingenuity of the Dutchmen has not yet succeeded in making this plant flower. Herbarium specimens show that it flowers well in its home in Transylvania and in the Caucasus, and that it differs from *I. graminea* by having scarcely any stem at all and an inch or two of perianth tube. In cultivation the author had never seen flowers of this Iris until one of his plants flowered in 1911.

We come next to *I. spuria*, the various forms of which are perhaps more perplexing than those of any other species. Its representatives range from Spain to Kashmir, and the names that botanists have given to the various local forms are legion. In Spain it is a slender plant with somewhat thick and rigid, rather glaucous, narrow leaves, and has a stem about a foot in height producing a single head of two or three flowers, packed one above

PLATE V
ONE OF THE NEW GIANT XIPHIUMS OR
“DUTCH” IRISES

A COMMON ASIATIC IRIS 59

the other close to the axis, on pedicels of unequal length. In Kashmir its relative grows 3 or 4 feet high, and bears a tall stem with about three closely packed heads—each bearing several flowers. The colour also varies: it may be yellow or a mixture of yellow and white, or it may be some shade of lavender blue more or less veined with white.

A Central Asian form of this Iris has received the name of *Güldenstadtiana*. It is a poor form, with flowers of small size unredeemed by any good features. Like most unwelcome intruders in our gardens, it is a most prolific seed-bearer, and if ever, after much correspondence with those in foreign parts, some wonderful Iris seeds arrive, the chances are that, if and when they at length germinate and finally flower, the grower will find himself in possession of one more form of this ubiquitous Iris or of the equally ubiquitous *I. ensata*. There is preserved in the Kew Herbarium a letter from Dr. Lange, a Danish botanist, who tried to form a collection of Irises soon after the middle of last century, and who after laboriously getting together a large number, complained that "the larger part of the Irises that he had educated from seeds had received improper names." *I. Güldenstadtiana* is one of the chief offenders in company with *I. Pseudacorus* and *I. versicolor*, and here is the explanation. All these seed freely, and the seeds germinate as readily. The consequence is that seedlings come up among rare or delicate species in the borders of botanical gardens, and finally choke or oust the legitimate occupants. The labels still remain, and the seeds are then carelessly collected and distributed in the name of the more desirable but departed species.

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But to return to the more valuable members of the spuria group. The Austrian form is capable of giving good deep blue flowers, and so too is probably the Caucasian *I. spuria Notha*. The Kashmir plants are probably the finest of all those forms with purple as opposed to yellow flowers, though they are not yet commonly found in cultivation. However, they do not differ widely from the hybrids that Sir Michael Foster obtained by crossing a large yellow-flowered *I. Monnieri* with pollen from *I. spuria*. These hybrids are of various shades of lavender, or blue-purple, and are showy garden plants.

The best of the yellow-flowered races have been called *ochroleuca*, *Monnieri*, and *aurea*. The first comes from Asia Minor, and has large flowers of yellow edged with, or rather shading into, white, and grows from 3 to 6 feet high according to soil and position. *Monnieri* has wholly yellow flowers of a deep lemon shade, while *aurea* is a Kashmir plant with flowers of a deep golden colour, distinguished by its crimped segments. The origin of *Monnieri* is veiled in mystery. It was first described as a garden plant, and the supposed specimens of it in all the chief herbaria of Europe which were obtained from Crete are not this Iris at all, but *I. Pseudacorns*, our common yellow water-flag. It may well be that it arose as a seedling form of some variety of spuria or *I. ochroleuca*. A hybrid *ochraurea*, whose name sufficiently indicates its parentage, is perhaps more free flowering than any of the above.

All the plants do well in heavy soil. If the soil is naturally light and dry, it must be kept cool by plentiful additions of old manure or decayed humus, and they all respond to liberal supplies of moisture during the growing

season. The sturdy, sword-shaped, upright leaves are a welcome addition to any border, set off as they usually are by a graceful twist in their growth and topped by the large clean-coloured flowers.

Another large group of Irises that make good and showy garden plants may be distinguished by the name of its best-known member, *I. sibirica*. This is a European as well as a Siberian plant, and in its best forms has hollow stems 3 feet or more in height, rising high above the narrow leaves and bearing a lateral, as well as the terminal, head of several flowers. The colour is usually blue, more or less veined with white, though several almost white forms are not uncommon. It is very easily raised from seed, and the young plants, planted out early and well treated, should flower a year later. The best forms can then be selected, either for size, shape, or colour, or even floriferousness, for individual plants certainly vary in their capacity for throwing up a large number of flower spikes. The clumps it is decided to keep should then be left alone, and if the soil is rich and not too dry their beauty will increase from year to year. The individual flowers are somewhat small, but the effect of a number of plants of fine forms of this Iris is very striking.

A fine Eastern relative of *I. sibirica* is *I. orientalis*, which is indeed probably a distinct species, if we may rely upon the characters of the seeds and the capsule and on the general habit of the plant. The flowers are of nearly the same shape of those of *I. sibirica*, but larger, fewer in number, and not raised much above the foliage. The spathes are usually brightly tinged with red, though this is a somewhat variable feature. Of this Iris there are forms

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with flowers of a milk-white colour, among the best of which is that known in gardens as Snow Queen.

In recent years the exploration of Western China has added many beautiful plants to our gardens, and it is to the two well-known plant collectors, Wilson and Forrest, that we are indebted for two yellow-flowered relatives of *I. sibirica*, namely, *I. Wilsonii*, and *I. Forrestii*. The former has the habit of the true *I. sibirica*, with numerous flowers on tall, hollow stems, of two shades of pale yellow, lightly veined with purple near the base of the segments. *I. Forrestii* is dwarfer even than *I. orientalis*, but is of a clearer yellow colour, and in some plants, at any rate, the falls are remarkably long and ample. Enough time has not elapsed since their introduction into our gardens to enable us to say whether these species will afford colour variations. Another Chinese novelty is *I. chrysographes*, with flowers of the richest, deep red-purple, veined with gold. This is another of Wilson's introductions, and it flowered for the first time in England in 1911.

A less recent introduction from China, belonging to the same group of hollow-stemmed plants, is *I. Delavayi*, which needs more moisture than those previously mentioned if it is to flower well. The stems grow 4 feet in height in rich soil, and the flowers are conspicuously blotched, rather than veined, with white on a deep purple ground. In the wild plant the flowers are somewhat small, but hybrids of it have already given forms with far finer flowers, that will flower much more freely in drier soil than that which *I. Delavayi* demands.

In America the group is represented by *I. prismatica*, which has a slender, wide-running rhizome, a peculiarly

wiry stem, and small, blue flowers of the shape of *I. sibirica*. It is not common in cultivation, but is a very graceful little plant.

Lastly we must notice the Himalayan member of the group, *I. Clarkei*. It is distinguished by a solid stem and by peculiar foliage. In habit it is not unlike *I. orientalis*, while the flowers faintly resemble those of *I. Delavayi*. In colour they vary considerably, and may be either blue or purple of various shades.

The mention of Delavayi as a water-loving species leads naturally to the consideration of others that do well in moist positions. One of our two native Irises, *I. Pseudacorus*, is well worthy of a place in any garden, and is moreover very accommodating. It will grow and flower well, although producing somewhat smaller flowers, even in dry Surrey sand. Colour variations of this are numerous, for some are pure yellow without the usual brown markings on the base of the blade, and there are also several pale primrose forms, one of which is known as *Bastardi*. This Iris is common in moist places all over Europe, and extends even into North Africa and Syria. Attempts have even been made to see in it the *Fleur-de-lys* of the French kings, and to derive its adoption as an emblem, from the fact that its yellow flowers indicated a ford over a difficult river to a king, who was hard pressed by the Saracens. The account is ingenious but not necessarily authentic.

In America the place of this Iris is taken by a somewhat closely related species, *I. versicolor* (syn. *I. virginica*). In habit it is not unlike *I. Pseudacorus*, nor is the shape of the flowers very different. The colour, however, is totally unlike, for it is always some shade of red- or blue-purple.

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This, again, is a plant where selection of the best forms is very necessary. The poorest are small in size and pale in colour, but the best have large flowers of a good deep blue-purple, or even of a velvety red-purple that borders on crimson. This form is in commerce as *I. versicolor kermesiana*, but it will appear among seedlings—if the raiser has any luck at all. *I. versicolor* is, of course, most luxuriant in damp rich soil, but it will do very fairly well with *Pseudacorus* in dry, hungry sand.

I. setosa was originally described as an Asiatic plant, but forms that cannot be separated from it are found in America, both in Alaska and on the east side from Labrador to Maine. There it is known as *I. Hookeri* or *I. setosa canadensis* or *I. tridentata*. At least half-a-dozen forms of it will come true from seed and be obviously dissimilar when growing side by side, but at the same time be practically indistinguishable as dry herbarium specimens. The peculiarity of this Iris is that the standards have dwindled until they are only small points of various shapes about half an inch long, and their disappearance is, in most forms, counterbalanced by the increased size of the falls. The colour is usually blue, but some shades are so light and pale as to become almost grey.

The last of the water-loving Irises, as also one of the latest to flower, is the well-known Japanese hybrid *I. Kämpferi*, so familiar an object in Japanese art. The varieties known as *I. Kämpferi* are evidently the highly-developed product of the hybridiser's art, but no account has ever yet been given of the steps by which they have been obtained from the wild species. The latter is a much more easily cultivated plant than the imported

Japanese hybrids, which seem to need moist, rich, or at any rate heavy, soil, and a warm, sheltered position, to do well. As mere colour, the Japanese hybrids are marvellous, but it is always hard to see how the Japanese, with their feeling for graceful lines, can ever have countenanced the doubling and distortion which seems to have been one of the chief aims of the hybridisers. The wild plant is much more shapely, and has flowers of a rich velvety red-purple. Moreover (and this is curious in view of the diversity of the Japanese results), its seedlings show—here in England, at any rate—no variation.

Another name that has been much confused with *I. Kämpferi*, namely, *I. lævigata*, does stand for a definite wild plant, which is the most magnificent of all really blue Irises. It is found wild in proximity to *I. Kämpferi*, but it is still very rare in cultivation. Garden forms of it are perhaps slightly better known, for they have been in cultivation in England for some years under the name of *albopurpurea*, which was given to a form which has white flowers of the same shape as the type, spotted with blue or purple. This appeared by chance at Kew among a Japanese importation, and some specimens of it may still be seen there in the new water garden.

A trio of showy Irises from the Southern United States deserves to be better known. It consists of *I. hexagona*, *I. Lamancei*, and *I. fulva*. The first, it is true, will only flower out-of-doors in a well-sheltered and warm corner, by preference close against the wall of some heated glass-house; but it is a majestic plant, with large purple-blue flowers on a tall, branching stem. *I. Lamancei* is becoming much more common in cultivation, and is more easily

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flowered. The only drawback is that the short stem is apt to hide the flowers low down among the crowded foliage. However, the individual flowers are remarkably pleasing, and present a combination of purple-blue on the segments and green on the style branches. The flowers are almost identical with those of *I. hexagona*, although botanically the structure is slightly different. Both produce their flowers from the axils of the leaves, and this is also a characteristic of *I. fulva*, which is unique in its terra-cotta colour and curiously drooping outline. It is quite hardy, but not always a free-flowering Iris. It rarely blooms before the end of June, and *Lamancei* is usually in flower at the same time with it. The result of a cross between the two is interesting. *I. fulva* was the seed parent, and the tall, branching habit of this plant is retained, but the hybrid has flowers of the shape and substance of *I. Lamancei*, the pollen parent. The colour of one form is a rich, velvety-red, indeed almost crimson-purple, while others have retained more of the blue colour of the pollen parent.

All the members of this group seem to prosper in a rather rich soil, and respond to moisture in the growing season by more vigorous development.

A little-known set of Irises comes from Syria, and comprises *I. Grant Duffii*, *I. Aschersonii*, and *I. masia*. An *I. melanosticta* has been introduced to commerce; but it is doubtful whether it is more than a colour variety of *I. Grant Duffii*. This latter is an ill-natured Iris, and one that is difficult to handle. In the first place, Sir Michael Foster lavished all his arts upon it for five-and-twenty years without once inducing it to flower, and the author has had no better result with some of these identical plants.

Moreover, it is spiteful even when gently handled, for the rhizome is covered with long and very sharp spines, which enter the flesh and then break off and make their presence known in the most unmistakable way. The flowers are of a greenish-yellow, and, as catalogues have it, it is a plant "of botanical interest." *I. Aschersonii* is somewhat similar in appearance ; but it flowers more easily and its spines are less vicious. *I. masia* is a purple-flowered plant of the same structure as the other two, but though the late Max Leichtlin once had it in cultivation and sent it to Foster, with whom it flowered, it is apparently not to be obtained at present.

The remaining Apogon Irises hardly seem to fall into any group. For instance, we have in England a very peculiar Iris, namely *I. fœtidissima* ; its habit is peculiar to itself, and so too are its orange-red seeds, which cling fast through the winter to the open capsules. Its usual form has dingy purple flowers of but little beauty, but there is to be found a yellow-flowered variety which is some improvement in this respect on the type. It is worth growing in half-shady places for the decorative value of the seed capsules in winter. Its leaves should be carefully handled, for they requite rough treatment by emitting a curious half-fœtid odour.

The small Japanese species *I. minuta* seems to stand by itself except for another species from China, not in cultivation, which, as far as can be seen by herbarium specimens, is closely allied to it. It produces about the middle of April small yellow flowers tinged with brown, and the plant is peculiar in that nodules form on its roots as on those of leguminous plants. It is not yet certain

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what the signification of these nodules may be, nor whether a separate class must on the strength of them be made for this species and its Chinese cousin.

There are in addition certain Central Asiatic and Chinese species that are either not cultivated or very rare in cultivation, such as *tenuifolia*, *Bungei*, *ventricosa*, *songarica*, *Henryi*, *Rossii*, &c. These can hardly yet be said to have their place in our "present day" gardens, though it is to be hoped that those who have the opportunity will be kind enough to send home a few seeds with the capsules. From these it would in most cases be possible to identify the species and to raise seedlings, which would introduce these Irises into general cultivation. Seeds travel more easily and more successfully than rhizomes, and the resulting plants usually establish themselves more readily in their new quarters.

CHAPTER XI

IRISES FOR THE ROCK GARDEN

I. BULBOUS SPECIES

FEW rock gardens contain many Irises, and yet some of the species are seen to the best advantage on its ledges, which raise them to the level of the eye. In the winter months especially, when many alpine treasures are either dormant with their heads tucked beneath the surface or reduced to mere withered tufts of dry leaves, what could

be more welcome than the large blue flowers of *I. alata* with their golden central stripe? It is unfortunately true that our summers are not long enough nor hot enough to ripen this Mediterranean bulb, but it is now so cheap that it is worth a shilling or two expended in purchasing annual supplies. The bulbs should be obtained as soon as possible, in August or early September, and planted at once in rich soil. Care must be taken not to break off the fleshy roots, which have a way of "coming off in your hand," and when this happens the bulbs are necessarily weakened, for these roots contain supplies of nourishment on which the bulb draws during the effort of flowering. When all is well, the reward is a succession of flowers from November till February.

Those who are fond of sweet-scented flowers, and those who are interested in any plant that comes from Palestine, should not fail to plant a few bulbs of *I. Vartanii* in some sheltered, sunny corner. In this case, too, the bulbs must be obtained early and planted at once. Old leaf-soil may with advantage be added to lighten a heavy soil or to enrich dry sand. Then almost immediately the leaves begin to push up, and usually well before Christmas the pale slaty-blue flowers appear. They are of the same shape as the well-known *I. reticulata*, but the style crests are longer, and somehow the effect is more fragile, and so too, unfortunately, is the constitution of this bulb. With care, however, and the aid of a sheet of glass to throw off excessive rain in the early months of the year when the foliage should be ripening off, the bulbs might be induced to live on from year to year, and possibly to accustom themselves to the altered conditions of our

climate. But then unfortunately they would probably lose their early-flowering habit. The other quality that makes this Iris so valuable is its delightful scent of almonds, which any gleam of pale winter sun is enough to bring out.

Even if these two autumnal Irises are hard to keep and almost demand annual renewal, this is not the case with the other small bulbous plants that seem so well adapted for the rock garden. *I. reticulata*, with its brilliant uniform of intense violet and gold and faint scent of violets, is probably the best known of the early spring-flowering species. It has, however, several relatives that are no less beautiful and quite as hardy. The smallest of all, *I. Danfordiæ*, found nearly forty years ago by Mrs. Danford in little colonies on the slopes of the Cilician Taurus, is bright yellow, sometimes faintly dotted with olive-green. This little mite seems indeed not yet to be full grown, for its standards are merely diminutive spines. A cousin that usually flowers at the same time in February is *I. Bakeriana*. The falls here seem to be cut out of violet velvet, so dark as almost to be black. It is dappled with white at the throat, where the blade of the fall meets the haft, and it distinguishes itself from all other Irises by its eight-ribbed leaves.

Bulbous plants with blue flowers are rare, and even when we have made up our minds to pay as much as three or four shillings for a single bulb of that most brilliant of all blue bulbs, *Tecophilæa cyanocrocus*, we cannot all succeed in making it flower or increase. But any one who cares to invest the same sum in a dozen bulbs of the form of *I. histrioides* that is supplied by Mr. C. G. Van Tubergen, Jun., of Haarlem, will surely not regret the outlay. It is necessary to specify the source from which these bulbs may be

obtained, for there are many forms that masquerade under the name of *I. histrioides*, but none is so good as this. Early in February the fat buds should appear almost as soon as the horny tips of the leaves pierce the soil. They quickly open and show their splendours of light and dark blue, splashed with white at the throat. *I. Krelagei* is another Iris, which at its best has magnificent flowers of crimson velvet, but there are Krelageis and Krelageis, and the poorest have small flowers of a washy purple and are hardly worth cultivating.

Almost before *I. alata* has sent up its last flower, some small but brilliantly coloured relatives should be ready to succeed it. It is hard indeed to describe the colour scheme of *I. persica*. Even with the help of the most elaborate colour charts we are entirely baffled. Imagine a pearly white flower washed over with turquoise-blue and sea-green laid on unevenly ; give it a blotch of warm purple-brown on the blade of the falls and a central orange stripe, and you will have some faint idea of the beauties of *I. persica*. It was grown in England three hundred years ago, but either its constitution is not strong or there is something in its cultivation that we do not understand, for it seems to get rarer instead of more common, and it is seldom that one sees *I. persica* in the form of a vigorous colony. Wretched specimens appear in tiny pots at shows from time to time, but the flowers are then undersized and puny, and attract but little attention.

Those who cannot succeed with *persica* itself should try *I. Heldreichii*, which is sometimes called *stenophylla*, though its leaves are scarcely narrower than those of *persica* itself. Its large flowers are a combination of pale

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grey-blue and indigo, the latter appearing in large conspicuous blotches. A good contrast, and perhaps a better doer, is *I. Tauri*, with deep purple flowers gaily veined with gold.

None of these bulbous Irises exceeds 8 inches in height, and their leaves wither away completely by mid-summer, so that some small annual can well be sown among them to cover the ground in the later summer months. The only disadvantage of this plan is that *I. reticulata* and its kind cannot be lifted and replanted unless one can make up one's mind to root up the annuals when in full flower in July. This frequent lifting and replanting of *I. reticulata* and its varieties is undoubtedly beneficial, but at the same time the bulbs should not be kept many weeks out of the ground, for they are apt to shrivel and deteriorate. If they must be stored for any length of time, they should be covered in dry sand, to keep excess of air from the bulbs. This will prevent the evaporation of the moisture within them and tend to keep them plump and sound.

CHAPTER XII

IRISES FOR THE ROCK GARDEN (*continued*)

II. RHIZOMATOUS SPECIES

THE previous chapter dealt with certain small bulbous Irises that find a fitting home and shelter in the rock garden. So long as the bulbous species are in flower, no rhizomatous

PLATE VI

I. XIPHIODES OR ANGLICA—A TYPICAL
GARDEN FORM

Iris throws up its blooms, except the Algerian *I. unguicularis* or *stylosa*, and this will soon become too big for its position unless the rock garden is on a large scale. Once, however, the last flowers of *I. reticulata* and *I. persica* of the year have faded, the first dwarf rhizomatous Iris may be expected to unfold its earliest buds, usually not long after the beginning of April. The actual date will vary slightly with the season, and also with the amount of shelter from cold winds that the surroundings afford. In most seasons it is a race between the dwarf, narrow-leaved Greek forms of *I. stylosa* (sometimes known as *I. cretensis*) and the true type of *I. pumila* as to which shall be the first to unfold its flowers, and the Greek plant usually wins by a day or two. It is important to lay stress on obtaining the real *I. pumila*, for this plant is still somewhat rare in cultivation. There is no difficulty in finding the name in catalogues, but it is quite another matter to find plants that fit the name, except, as a rule, those varieties that are offered under the names of *pumila cœrulea* and *pumila azurea*. These two names are not quite synonymous, or perhaps it would be nearer the truth to say there do exist two garden forms for which these two names may be used. There is very little difference between them: in colour, in fact, there is none, but one is superior to the other both in size and vigour, and is moreover more floriferous. Of the better form it is possible to have as many as thirty flowers on a patch a foot square, and the colour is a rather grey sky-blue.

These pumilas are, for their size, at any rate, some of the most floriferous of Irises, and the whole plant with

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the flower is not more than 6 inches high. As it flowers so profusely on any dry, windy, and sunny slope, it is obviously well suited to exposed ledges in the rock garden. There are many colour varieties even in the wild state, and forms may be obtained with purple, yellow, blue, and even nearly white flowers. The yellow seems to predominate in the East and the purple in the West, and it is to be hoped that some kind traveller to Greece, and especially to Attica, where the plant is common on Mount Pentelicus and on the surrounding hills, will bring or send home a fresh supply of either rhizomes, seeds, or both, of the Greek form of this *Iris*. Most rhizomatous *Irises* are excellent travellers. They can be torn up when in full flower, wrapped in a little dry moss and wool, and posted home by sample post, for, of course, they are scientific botanical specimens. They should not be elaborately packed in damp moss, for this is apt to engender mildew on the way. The close wrapping in some nearly dry material is quite enough to prevent all the natural moisture being evaporated out of the rhizomes, and also secures them against crushing in the post.

Another little April flowering species for the rock garden, *I. minuta*, comes from the Far East, and is still rarely seen. It has small, bright yellow flowers and narrow, grassy leaves. It is difficult to say with certainty to which group it really belongs; indeed, in some ways it stands widely separated from all other species known in cultivation, though it has a Chinese relative that has not yet been introduced. Here, again, one would like to invoke the help of travellers in China. There are at least half-a-dozen delightful little species, all well suited to the rock garden,

which we only know as dried herbarium specimens. It is doubtful whether living plants of some of these could stand the long journey, unless they came by post through Siberia, but seeds would soon give us a stock of plants, probably more vigorous and better acclimatised than any transplanted roots.

I. ruthenica is a very widely distributed plant in the wild state, but it has suffered from neglect in our gardens, owing to the fact that some of its varieties live on from year to year without flowering. To what cause this is due it is impossible to say, for other forms growing in similar conditions a few feet away throw up many flowers, and very pleasing they are, with their pink-edged spathes and blue falls veined with white. It does not seem fastidious as to the soil in which it grows, but it does object to being moved, except while growth is active. The grassy leaves are arranged in spreading, fan-shaped tufts, which soon spread into great mats.

For half-shady spots, low down, when the soil is kept cool and somewhat moist, two small American Irises, *I. cristata* and *I. lacustris*, are eminently suited. The latter is nothing but a dwarf, deep-coloured relative of the former, but it has the additional merit of flowering in September and October, as well as in the spring. They both require well-rotted vegetable mould, to which the addition of small, gravelly stones will prove beneficial by helping to retain moisture. The delicate lavender or lilac-coloured flowers are spreading in outline and set off by an irregular, yellow-dappled crest, recalling the well-known *I. japonica*, to which indeed these species are distantly related.

America also supplies us with a group of most beautiful

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Irises from California, which, if they were better known, would certainly be found in nearly every rock garden, except, perhaps, in those where the whole of the soil is highly charged with calcareous matter. For lime-haters they undoubtedly are, though in light, sandy soil they thrive amazingly, and most of them have, moreover, the excellent quality of remaining more or less evergreen throughout the winter. No one who has seen the crimson-veined, ochre-yellow flower of *I. bracteata* or the brilliant silver and claret of *I. tenax* will willingly be without them. *I. Douglasiana*, too, of which no two plants seem to produce flowers of identically the same shade of colour, is scarcely too vigorous for a large sunny corner. Not one of these Irises seems to appear at shows in good form, because few nurserymen grow them. As a matter of fact, transplanted roots are seldom a success, and the best plan is to beg seeds from gardening friends, who, if they grow these Irises at all, will probably have plenty to spare, for all seed freely. Those who are eager to have their plants sooner in flower than the two years that seedlings demand, may try their luck with pieces taken off, while growth is active, and if the root fibres are preserved undamaged and not allowed to dry up and wither, their efforts may meet with success. Some gardeners seem to have the knack of being able to transplant anything at any time. It can only be done when the gardener has a kind of intuitive knowledge of the habits of the plant, and prefers to act by the light of nature rather than to follow out blindly and unintelligently the letter of the instructions given by the owner of some other garden where conditions are slightly different.

Perhaps the most amazing of all rock-garden Irises is

I. arenaria, which, as its name implies, likes sand, but not pure sand without nourishment. The slender rhizome creeps about just under the surface, and should spread in all directions. Then in April many of the growths are seen to be getting plump, and by May they burst out into bright, clear yellow flowers with thick orange beards. It is unfortunate that the plant seems almost to exhaust itself by overflowing. It needs therefore to be given fresh soil about every two years, or at least be top-dressed in spring. The surface soil may be nearly pure sand, but an inch or two down the roots should be able to find something more nourishing, though still light and warm. The brilliance of a good mass of this little gem among Irises is not easily forgotten. Seed may easily be obtained by artificial pollination of the flowers, and it germinates fairly readily. Young plants grow very fast, and soon cover quite a large space with their wide-creeping rhizomes, and produce six or eight flowering stems in their second season.

Near *I. arenaria* might well be grown such small *Oncocyclus* species as *paradoxa*, *iberica*, *acutiloba*, &c., and their darker flowers will provide a foil for the brilliant yellow of the former species. The sharp drainage of the rock garden will also be in their favour.

So far there have been mentioned those small Irises which seem to be very little known, but which only need to be known to be installed in most rock gardens. We must not, however, forget that even the most negligent of gardeners may obtain a fine display of colour among the rocks in April and May, by planting largely the more common small, bearded Irises, such as *I. chamæiris*, *I. olbiensis*, *I. bosniaca*, and *I. balkana*, even if he does not

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care for the less garish beauties of the tiny *I. rubromarginata*, with deep red edges to its leaves and curious, lurid flowers.

Other Irises still rarer are *kumaonensis* and *Hookeriana*, both from the Himalayas, where whole upland valleys seem in some districts to be thick with them. The former especially is very desirable, for a little clump no more than four inches across may send up half-a-dozen flowering shoots from which, while the leaves are still quite short, burst out the curiously mottled red- or blue-purple flowers with their thick beards of white silky hairs tipped with yellow or orange. No one seems to know why it is that nearly all Himalayan Irises have flowers mottled with two shades of the same colour; it is a very peculiar characteristic, and found in *I. Milesii* and in *I. goniocarpa* as well as in the two just-mentioned species. These latter both need moisture from March to October and all the sun that they can get.

Our tale of dwarf rock-garden Irises is nearly ended, but we have yet to introduce the most fairy-like of all, *I. gracilipes*. This slender, beautiful little species comes from open glades in cool woods in Japan. In dealing, however, with Japanese plants we must always remember that the Japanese sunlight seems to be of a different quality to our own. Growth ripens in woods there that need almost full sun here. *Gracilipes*, for instance, will here succeed well in moist vegetable soil in any position where it is shaded from the sun for about half the day, but does not like a wholly shaded position. This does not mean that it must be overhung, for dripping moisture would prove fatal to it, but in an open space between small shrubs at the edge of a peat bed it does well. There the rooting medium is cool

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and slightly moist, and the shadows of the surrounding shrubs will save the slender rhizome and stem of *I. gracilipes* from succumbing to the parching drought. Similar conditions may be obtained in the rock garden by planting this Iris where the shadow of some rock will shield it from the sun for part of the day. It does best in a position facing west. Its thin, wiry stem bears two or three little branches, each tipped with a delicate pinkish-lilac flower of the same flat, spreading form as *I. cristata* and *I. japonica*. The tiny crinkled crest is flecked with gold, and it is altogether a most desirable Iris.

CHAPTER XIII

IRISES FOR THE HERBACEOUS BORDER

IT is always somewhat surprising to find that in the majority of gardens comparatively little use is made of Irises in borders of herbaceous plants. The reason seems to be that Irises are looked upon as short-lived flowers, and therefore not worth the space they occupy. But, while it is no doubt true that the individual blooms do not last more than two or three days, it is equally true that the flowers on each stem open in succession, and thus extend the flowering time to a period not much shorter than the space during which other herbaceous plants are at their best. It may also be remarked that the leaves of many Irises are more decorative as mere foliage, and last, in good condition, longer than the often unsightly remains of other herbaceous plants when the flowering season is past.

The object of this chapter is, therefore, to make sugges-

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tions as to the various sorts of Irises that seem especially adapted for use in the herbaceous border.

In the first place, it is not easy to find many plants that make a better permanent edging than some of the dwarf early-flowering bearded Irises. For mere floriferousness, the true *I. pumila* in its endless colour varieties can hardly be surpassed. When in flower, the whole plant is not more than 6 inches high, and the flowers ought to be so closely packed as almost to obscure the leaves. It is usually at its best by about the middle of April, and if there is any drawback to the employment of this particular species as an edging, it is that it loses its leaves almost entirely in late autumn and winter. On the other hand, the extraordinary range of colour to be found in the flowers is distinctly in its favour. They may be white, pale blue, yellow, yellow with a mahogany blotch, pale purple, or even a deep and rich velvety black-purple.

It is difficult to give any reason for the undoubted fact that to some people a far greater appeal is made by wild species than by mere florists' varieties, however huge and gorgeous the latter may be. There appears to be some indefinable quality in the flowers of the wild types, and possibly also in those of first crosses between them, that is altogether lost in plants whose parents and ancestors have been hybrids for two or three generations. Those who have this feeling will prefer the true *I. pumila* to the mongrels that are usually grown under this name, and which appear in endless numbers in every catalogue. Almost without exception they are forms or varieties of *I. chamaeiris*, which is easily distinguished from the real *pumila* by the shorter tube, the shorter, broader, and less scarious spathes,

and by the fact that a stem is always present. This may vary from 1 to 2 inches to nearly a foot in height, according to the conditions under which the plants grow. In the South of France, the smallest forms are found in open positions on dry, limestone formation, while in half-shade, or where the soil has collected in a hollow and formed a richer bed, other forms occur which are two or three times as large, but which differ in no other particular. In cultivation under uniform conditions this difference disappears, and we get a series of plants having stems of about 6 to 10 inches in length and bearing one or two flowers. The leaves are usually slightly shorter than the stems at flowering time, and the plants are very floriferous, besides providing us with flowers of very different colours—blue-purple, claret-purple, yellow, white, and various combinations of these shades. Another peculiarity of *I. chamæiris*—and one which need not surprise us when we contrast the different conditions that prevail in winter in the South of France and in Northern Italy with those that are experienced on the hills near the Danube—is that the leaves remain more or less green throughout the winter. In fact the plants may almost be called evergreen, and not unnaturally, therefore, the wild plants when introduced into our gardens do not prove to be quite so hardy as *I. pumila*.

However, so many varieties of these dwarf hybrids of *I. chamæiris* are now obtainable that a visit to any good nursery garden will almost certainly lead to the discovery of plants of the colour desired. It is impossible to give any list of names here, for each catalogue seems to have a list of its own, and thus the only way to make certain of getting what is required is to see the plants in flower

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and to transplant them at once. This early disturbance, it cannot be repeated too often, will do the plants no harm; in fact they should be all the better for it in the following year, for these comparatively shallow-rooting and fast-growing plants cannot be grown year after year in the same spot without deteriorating, unless they are lifted from time to time and given fresh soil.

A good effect may be produced in borders by planting late flowering Darwin or Cottage tulips among clumps of such forms of *I. germanica* as that which is known in England as the type, Amas (macrantha), Kharput, Oriflamme, atropurpurea, or florentina. Only the tallest of the so-called Cottage tulips are suitable for use in this way, but all the Darwins are of sufficient height to throw up their flowers well among the Iris blooms. Not only do these two plants do well together, but they may be left untouched in any well-drained soil for two or three years, after which the whole should be lifted, as soon in the season as the tulip stems can be bent double without their snapping. The Irises can then be replanted in clumps, with possibly some dwarf-growing annual to hide the bare patches between them until the autumn, when the tulips can be replanted early in November.

Where such an arrangement is adopted, care must be taken that rampant plants, such as perennial Sunflowers, Delphiniums, and above all Michaelmas Daisies, do not encroach upon the Irises, when the latter have become mere clumps of foliage, and thus deprive them of that place in the sun, and of the consequent ripening of the rhizomes, which is essential if the plants are to flower well in the following season.

The broad glaucous foliage of *I. pallida*, especially of the Dalmatian forms, is an ornament in any border long after the flowers are over ; or, if a thick mass of fine deep green leaves is wanted, a place near the front might be found for *I. graminea*. The flowers are never conspicuous, hiding themselves among the leaves, but their scent is delicious, although here again care must be exercised in obtaining the plants, for some are scentless, while in others of the same batch of seedlings the fragrance is most marked.

Few Irises are more decorative or more worthy of a place in any border than the best forms of *I. sibirica*. Once more, the form or variety is all-important, and, once again, few catalogues can be relied upon. It is perhaps only those who have raised *I. sibirica* from seed who can realise the endless variations that can be obtained. The probability is that there are a certain set of factors or unit characters that can be united in various combinations according to Mendelian principles, but these factors have not as yet been worked out for any Iris. At present, all that can be said is that the Western forms of *I. sibirica* are much more decorative than the Eastern *I. orientalis*, which was described more than a century ago by Thunberg. The latter is apt to hide its often magnificent flowers among the foliage, but the best of the European forms throw up a whole sheaf of slender stems, each surmounted by about six flowers, opening in succession, and either blue or white. *I. sibirica* likes a soil that is rich in humus, and prefers to be left undisturbed provided that there is no lack of nourishment for its roots. This may be provided by an annual winter mulch of leaf-mould

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and manure, which will also tend to keep the surface loose during the summer, and so prevent loss of moisture by evaporation.

I. sibirica is at its best early in June, and after that date few Irises can be recommended for the ordinary herbaceous border except the various members of the spuria group. The exceptions, of course, are the well-known Spanish (xiphium) and English (xiphioides) Irises. Of these the former will succeed better in dry and the latter in moist soils. A flower of the spuria group is in many ways very similar to a Spanish Iris. The segments of the flowers of these two species are almost identical in outline, and both exude the curious drops of sticky moisture on the outer surface of the perianth tube. But whether this is or is not the point at which the bulbous and the rhizomatous Irises meet, the spuria group deserves to be represented in any border. All the members have tall, stiff, sword-like leaves of a dark green, topped by a sturdy stem, bearing two or three close-set heads of flowers. The branches do not spread, but rise alongside the main stem, so that the flowers, as they open in succession, beginning at the top-most, produce the effect of being set one below the other on the same stem.

One of the best known of the group is ochroleuca, white and yellow, while aurea has golden flowers with wavy edges to the petals. Monnieri is a lemon-yellow ochroleuca to all intents and purposes, and ochraurea is a free-flowering hybrid of the two first-mentioned plants. If either of the others fail to flower, ochraurea should be given a trial, and in any case all need rich feeding in autumn and winter, and a certain amount of moisture when

PLATE VII
I. OCHROLEUCA

growth is active in the summer. Blue-purple is provided by the wild European spuria and also by some hybrids, raised by Foster, between Monnieri and spuria, which are in commerce under the names of Dorothy Foster, &c.

Many other Irises might be recommended for the herbaceous border, as, for instance, the grassy-leaved *I. ruthenica*, which, when its best form is doing well, literally hides its foliage beneath its close-set flowers, or the dwarf pale, grey-blue form of *I. setosa*, which probably comes from Labrador. Both of these would make excellent edgings, and should certainly be tried as soon as they become somewhat more common in our gardens than they are at present. The same temporary disability attaches to *I. bucharica*, a Juno species well worthy of a prominent place in any early April bulb border. If well treated, it increases fast—so fast that the bulbs should be lifted and separated at least every two years, or they will begin to deteriorate from sheer lack of nourishment.

The plants mentioned in this chapter are not intended to form an exhaustive list, but merely to act as suggestions for a more extensive use of Irises in our borders.

CHAPTER XIV

THE CULTIVATION AND PROPAGATION OF IRISES

RHIZOMATOUS Irises have suffered much from the very fact that their hold on life is tenacious. Many of them will

continue to live in dark, shady corners, only to be blamed because they cannot there ripen their rhizomes sufficiently to produce flowers. Again, that most murderous of garden institutions, the herbaceous border, in which, according to its devotees, no gleam of the soil must be allowed to appear, is fatal to many Irises. They cannot be expected to ripen their growth if they are choked throughout the late summer by "carpeting" plants, and then transplanted late in the autumn, when the borders are renovated and tidied up for the winter. If gardeners would only realise that much trouble may be saved by shifting Irises when they have only just finished flowering, or even when actually in bloom, far fewer flowers and plants would be sacrificed. The reason for this protest against autumnal transplantation is obvious to any one who has ever taken the trouble to examine the root system of an Iris. The roots seem to grow to their full length unbranched, and it is only when the tips cease to grow down into the soil that the upper parts begin to send out the fine rootlets on which the plant depends for its nourishment. To ensure success, then, in transplanting Irises, they should be shifted in time for the main roots to grow down uninjured into the soil, where they will then be anchored, long before winter arrives, by the branching lateral rootlets. If the rhizomes are disturbed at a late period, the roots obtain a very slender hold, if any, on the ground, and alternations of frost and thaw in winter may lift them out of the soil altogether.

Another advantage of this early transplantation will appeal even to those whose main object in gardening is the production of colour schemes in their borders. It is

that mistakes in arrangement are far less likely to occur, when the remains of the flowers can still be seen on the plants, than when fallacious labels are the only guides that remain.

The propagation of Irises is effected either by division of the rootstock or by means of seeds. The process of raising Irises from seed is far easier and more certain than is usually supposed. All that is necessary is to sow the seeds in pots early in the autumn and to plunge the pots outside in some cool position. Germination should ensue in the following spring, and in May, June, and July, the young plants may be planted out in the positions where they are to flower. Given good soil, fair weather, and some attention in the matter of weeding and cultivation of the surface between the plants, the majority should flower in the following spring.

This does not apply to bulbous species, which should be allowed to complete their growth for one or two years in the seed pots. They take as much as four or five years before they reach flowering size, but here again care and good cultivation will reduce the period of waiting to three years.

Hybrid seed is much more apt to be irregular in germinating than the seeds that result from the self-fertilisation of a species, and, when only a few seedlings appear in a pot, it may be necessary to go through the tedious process of sifting the soil to separate the remaining seeds, which may be re-sown at once.

CHAPTER XV

IRISES THAT SELDOM FLOWER

It may appear somewhat paradoxical to mention Irises that seldom flower, but the following list may prove a warning to some, and at the same time be of interest to those who delight in the overcoming of difficulties and in the cultivation of fastidious plants.

One of the most puzzling of these Irises is the *I. humilis*, which is a relative of *I. spuria* and *I. graminea*, but which is sometimes confused with *I. ruthenica*. In habit it is not unlike a small *I. graminea*, and the stiff, rigid leaves seem always to be in the best of health, but year after year the plant disappoints our hopes and remains flowerless, and this even in the hottest and driest of positions.

This year, for some unknown reason, one small plant of this Iris sent up two flowering shoots, each producing two flowers. As, however, the latter are practically identical with those of a dull-coloured example of *I. graminea*, and as they are produced so low down as actually to touch the ground, the only interest that the plant offers is the discovery of the exact requirements.

Another enigma is presented by the *I. ruthenica* which has just been mentioned. Some forms are very floriferous and are delightful indeed, but on others flowers are very rare, and on others, again, they are never seen at all. Aspect and position seem to have no effect, and the only way to

obtain a satisfactory form of this Iris is to beg or buy a plant when it happens to be encountered flowering properly. Besides ensuring the acquisition of a free flowering variety, this plan has the additional merit of leading to the transplantation of the plant at the season when success is most probable, namely, when the plant is in full growth.

In gardens where the soil is a cold, wet clay, great difficulty is often found in inducing *I. unguicularis* to flower—an Iris popularly known by the incorrect name, *I. stylosa*. The best hope of success would be the construction of a raised bed against a wall facing south. It need only consist of a small heap of light soil, containing by preference plenty of old mortar rubble. This can be supported and edged with a few large stones in such a way as to assure good drainage. The plant does not need rich soil. In it, indeed, its growth is phenomenal, and in inverse proportion to the number of flowers produced.

Another difficult species is *I. hexagona*, from swampy ground in the Southern United States. It needs warmth and space, for its rhizomes run straight ahead for a considerable distance. One of the few places where it flowers well in the open is in a sheltered border between two of the glass-houses in the Cambridge Botanic Garden.

A near neighbour of *I. hexagona* is the somewhat uncommon *I. fulva*, which is distinguished from all other Irises by the terra-cotta colour of its flowers. Although it comes from the swamps of the South-eastern States, and although in a hotter climate than ours, as, for instance, on the Mediterranean coast of France, it will flower well when actually grown in water; with us it needs a hot and dry position if it is to produce its extraordinary flowers in any

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profusion. It well repays trouble, for its flowers come late in June, when Iris blooms are beginning to get scarce, and its graceful growth with the flowers set at intervals up the stem in the axils of the leaves produces a particularly pleasing plant.

Another Iris, and this a bulbous species, that under ordinary garden conditions remains flowerless year after year, is *I. tingitana*. This, as its name implies, is a North African species, and really wants more heat than we can give it here. However, in the case of this Iris, lack of heat gives rise to a demand for a more liberal diet, and it seems to be able to assimilate the plant food in any amount of old, well-rotted manure that may be placed an inch or two below the base of the bulbs, which are themselves surrounded with sand. Even with this treatment the bulbs should either be lifted annually and planted rather late, or else kept absolutely dry under lights for some months. When *I. tingitana* flowers well, it is a really glorious sight. Its flowers are larger than those of any other kind of xiphium or Spanish Iris, and the different shades of blue and purple in the standards and the falls form a most delightful contrast. Owing to the fact that the flowers appear late in April or early in May, the bulbs should be planted in a sheltered, sunny spot, where some protection from late frosts can be afforded. In exposed positions a sudden snap of cold may nip all the flowers in the bud, and frustrate all our hopes for that year of seeing this noble Iris in bloom.

The complaint is sometimes made that "German" Irises will not flower, and are not worth the space they occupy. It will usually be found that this is caused by one of three things. Either the position is such that no

sun reaches the rhizomes, or the plants have deteriorated through being left so long in one place that the soil in contact with their roots is exhausted, or else some devotee of "no-bare-earth-anywhere" gardening has carpeted the rhizomes themselves as well as the soil between them with mossy Saxifrage, Arenaria, or Acæna, with the result that the sun is no longer able to reach and ripen the rhizomes, which after all are the most essential and permanent part of the plant. At first the Iris leaves may look well rising from their green carpet, but in the following season the flowers will most probably be looked for in vain. If those three conditions are avoided, *I. germanica* and its allies cannot be placed among shy-flowering Irises, provided always that they are not grown in such heavy clay that drainage is practically non-existent a few inches below the surface. This last condition is most likely to be present in town gardens, especially in London, where the subsoil is less energetically and constantly worked than should be the case under more ideal conditions in the country. Rhizomatous Irises are healthier, on the whole, in a heavy soil than in poor sand, but the drainage must be good, or the rootlets will rot away, and the plants remain stationary instead of growing.

CHAPTER XVI

SOME IRIS PROBLEMS

IN case this small book falls into the hands of any one of an inquiring turn of mind, who cannot rest until he has

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done his best to solve any enigmas that he meets, it may be as well to mention some of the difficulties which remain unsolved with regard to the Iris.

One very interesting problem lies in the determination of the factors that produce the colour of the flower. Research on Mendelian lines into the colours of flowers has led to the discovery of the factors in such flowers as *Primula sinensis*, but Irises seem to be peculiar in that the colours of the flowers of an individual plant are apt to vary from year to year, especially in the case of purples and yellows. For instance, plants of *I. chamæiris*, *bosniaca*, *serbica*, *Talischii*, which are picked out one year for the clearness of their yellow colour, may in the following season be entirely spoilt, from the garden point of view, by the appearance of purple veins and streaks, which give the pure yellow a muddy appearance. Stranger still, perhaps, are the instances, rare, but not unknown, where one segment of a flower is purple on one side, and yellow on the other, of the centre line.

It seems as though there is underlying these changes a delicate chemical question. For instance, a solution of purple colouring matter from Iris flowers is changed by addition of a solution of lime into bright yellow, and the question of its origin and nature is probably very intricate. It would, however, be a great gain to know what the determining factors are, for then we might be able, by making suitable additions to the soil in which the plants are grown, to have at will purple or yellow flowered forms of certain Irises, or, at any rate, eliminate from our gardens those dingy yellow flowers, which sooner or later appear on those plants which, in a former year, we have picked out

PLATE VIII

A DOUBLE JAPANESE FORM OF I. KÆMPFERI

from their fellows as being distinguished for the purity of their colouring.

Another problem, of no less interest, is to determine the conditions most likely to ensure the germination of seeds. Generally speaking, the seed of a species, when fertilised with its own pollen, germinates readily, but hybrid seeds are apt to lie dormant for years. The longest time for which an Iris seed has been known to lie dormant in the ground before seeing fit to germinate is eighteen years. This happened with one of Sir Michael Foster's hybrids only a few months before his death, and instances of seeds germinating after several years are by no means unknown to any who have engaged in the fascinating pursuit of raising Irises from seed.

It would be useful, too, to know the conditions which would induce more Irises to flower again in the autumn. Is this character an idiosyncrasy of the individual plant, or is the second flowering brought about by any external circumstances? The author once raised an *I. pumila* from seed, which germinated early in spring, and flowered in the month of October in the same year. It is well known that these autumnal displays can be obtained, given a favourable autumn, by timely sowings in the case of other perennials. Delphiniums, for instance, sown in the open in spring, and transplanted early, often make a brave show of spikes in October. Irises, however, cannot be relied upon to flower as soon as this, but is it possible by refusing, for instance, to allow a plant to flower in the spring, or by special treatment during the summer, to ensure an autumn display of flowers? It is a question worth some thought.

A query for those who seek to find adaptation in every-

thing, is the use and origin of the beard. The answer can scarcely be found in the general view that it serves as a kind of sign-post to direct intruding insects towards the nectar in search of which they come. For why should most bulbous Irises be either beardless or else so closely shorn that the beard is only microscopic, while at the same time two or three species adorn themselves with conspicuous beards? Is it mere chance, or can any design or purpose be detected? Why do many species find a beard necessary while as many prosper without it?

Moreover, there is the position of the crested species to be considered. Is the crest an intermediate or an extreme character? Did the crest arise as a variation of the beard or the beard from the crest, or did they both arise independently from a parent possessing neither?

Another point, on which some light may perhaps be thrown by comparing Irises with other genera of plants, is this. About half the species may each be readily distinguished by their seeds alone, while others belong to groups, each having seeds of a certain type. Within each of these groups the seeds cannot with certainty be distinguished. On the supposition that all Irises have developed in the course of ages from one ancestor, which are the more ancient, the species whose seeds are peculiar to themselves, or the members of groups whose seeds are indistinguishable among themselves though readily differentiated from those of all other groups? Or what is the explanation of the phenomenon?

These are some of the many interesting problems to which the close study of any group of living organisms

cannot fail to give rise, and attempts at their solution must needs add zest to the interest of the mere growing of the plants.

CHAPTER XVII

THE ILLUSTRATIONS

IT is difficult in a series of so few as eight plates to give much idea of the diversity of types to be found within the Iris genus. In deciding what species or varieties should be represented, two courses suggested themselves. It might have been possible to select eight of the rarest species; but since the beginner will not want to start with these, it seemed better to choose those Irises which, while being themselves easily obtainable, were at the same time representative of the different groups.

The bulbous species are represented by *I. bucharica* (see Plate I.), which is undoubtedly the finest for garden purposes of the Juno group (see page 17), and by one of the so-called Dutch Irises (see Plate V.), which are a great improvement in size and vigour on the old forms of Spanish Irises. The third representative bulbous Iris is also a member of the Xiphion group, and is included because *I. xiphioides* or *anglica* (see Plate VI.) can be grown with success by those whose soil is too damp and retentive for such species as *I. xiphium* and *I. bucharica*. to do well except in specially well-drained and prepared quarters.

Since various forms of bearded or Pogon Iris are so commonly found in all gardens, it seemed unnecessary to devote to them more than the single plate of *I. Jacquimiana* (see Plate IV.), a richly-coloured representative of the so-called German Irises.

I. Susiana (see Plate III.) was included as being the least capricious and perhaps the least difficult to grow of the Oncocyclus group. Its sombre colouring is to some extent typical of the group, though it must be added that *I. Susiana* is the most sombre member of the group, and that there are some species, such as *I. urmiensis*, with its pure yellow, and *I. Lortetii*, with its soft pink and deep crimson, that are really gorgeous in their colouring.

To the great beardless or Apogon section it would have been easy to devote the whole of the eight plates without reproducing any two Irises that were at all similar.

Of the three examples chosen, *I. longipetala* (see Plate II.) is perhaps the most easily established member of the much neglected, but very beautiful, Californian Irises; *I. ochroleuca* (see Plate VII.) is the finest of the large group of Irises akin to *I. spuria*, and a clump either of *I. ochroleuca* or of its kindred *I. aurea* and *I. Monnierii* or of some of Foster's Monspur hybrids is an ornament to any border. The last of the three plates of beardless Irises, a Japanese hybrid of *I. Kämpferi* (see Plate VIII.), shows the usual form of these double flowers, which for some unaccountable reason the Japanese seem to prefer to the more graceful single-flowered forms. They are at home in sunny water-gardens or in any rich, heavy soil where the subsoil is moist in summer.

CHAPTER XVIII

AN IRIS CALENDAR

THE following list is not intended to be absolutely exhaustive, and only includes those species that are easily obtainable. The few exceptions, *e.g.* *dichotoma* and *chamæiris* × *trojana*, are included in order to show that some Irises may be had in flower even in August and September, though neither of these plants is commonly to be found in catalogues.

The dates for planting and transplantation are not the only possible times, but the best times—the times, that is, at which the plants, given ordinary conditions, most quickly become established in the ground. In most cases Irises may be planted at considerably later dates than those mentioned, but there is then always the risk that an exceptionally hard winter will either cripple the plants or kill them outright, or at least prevent any display of flowers in the following season.

Species in Flower.	Height, Inches.	Planting Season.
<i>January—</i>		
I. <i>alata</i>	6-9	October.
I. <i>palæstina</i>	4-6	"
I. <i>unguicularis</i>	6-12	April or September.
I. <i>Bakeriana</i>	4	August to October.
I. <i>Histrio</i>	6	" "

Species in Flower.	Height, Inches.	Planting Season.
<i>February—</i>		
I. Bakeriana	4	August to October.
I. reticulata, var. Krelagei	6-8	" "
I. histroides	6	" "
I. Danfordiæ	3	" "
I. unguicularis	}	See under January.
I. alata		
I. palæstina		
<i>March—</i>		
The February species.		
I. tuberosa	8-12	August to October.
I. reticulata	6-10	" "
I. persica, its varieties and hybrids	6	" "
I. sindjarensis	9-12	" "
<i>April—</i>		
I. unguicularis	}	See previous months.
I. tuberosa		
I. persica		
I. sindjarensis		
I. bucharica	12-18	August to October.
I. orchioïdes and its varieties	"	" "
I. warleyensis	9-12	" "
I. Willmottiana	"	" "
I. Fosteriana	"	" "
I. pumila	4-6	April to June.
I. chamæiris	4-10	" "
I. minuta	4	" "
<i>May—</i>		
I. germanica and varieties	12-18	May to September.
I. florentina	15-18	" "
I. aphylla	6-12	" "
I. Tolmeiana	12	" "

Species in Flower.	Height, Inches.	Planting Season.
<i>May (continued)</i> —		
<i>I. longipetala</i>	15-18	May to September.
<i>I. Tollong</i>	"	" "
<i>I. xiphium præcox</i>	9-12	August to October.
<i>I. ensata</i>	6-12	May to September.
<i>Oncocyclus Irises</i>	6-18	Oct. or early March.
<i>Regelia Irises</i>	12-18	October (early).
<i>Regelio-cyclus Irises</i>	"	" "
"Dutch" Irises	18	August to October.
<i>June</i> —		
"German" Irises	18-30	June to September.
"Spanish" Irises	12-24	August to October.
"English" Irises	12-18	" "
<i>I. graminea</i>	6-12	June to September.
<i>I. spuria</i> and its varieties	12-36	" "
The Californian species	6-18	March to August.
<i>I. lævigata</i>	12-15	June to September.
<i>I. tectorum</i>	"	" "
<i>I. cristata</i>	6	June.
<i>I. gracilipes</i>	8-12	June to August.
<i>I. lacustris</i>	4	June.
<i>I. setosa</i>	12-36	June to September.
<i>I. versicolor</i>	18-36	" "
<i>I. Pseudacorus</i>	"	" "
<i>July</i> —		
<i>I. Kämpferi</i>	18-36	August or March.
<i>I. aurea</i>	24-36	July to September.
<i>I. Monnieri</i>	"	" "
<i>I. ochroleuca</i>	"	" "
English Irises	12-18	August to October.
<i>I. Milesii</i>	24-36	July to September.
<i>August</i> —		
<i>I. Kämpferi</i>	18-36	August or March.
<i>I. dichotoma</i>	18-30	September.

Species in Flower.	Height, Inches.	Planting Season.
<i>September—</i>		
I. dichotoma	18-30	September.
I. chamæiris × trojana . . .	18-24	June.
I. lacustris	4	"
I. Guldenstadtiana	18-24	July or September.
<i>October—</i>		
I. alata	6-9	August.
Pogoniris various (very irregularly and more particularly first crosses between species).		
<i>November—</i>		
I. alata	6-9	August.
I. Vartanii	6	"
I. unguicularis	6-12	April or September.
<i>December—</i>		
Same as November.		
I. Histrio	6	August to October.

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